USER MANUAL

ELECTROFUSION CONTROL BOX
MODEL BEAT HF

Edition: December 2014
Revision No. 3
Publication: MU-78-10E

DATOS DEL FABRICANTE ***MANUFACTURER DATA***	**DATOS DEL DISTRIBUIDOR Y SAT** ***DISTRIBUTOR AND SERVICE DATA***
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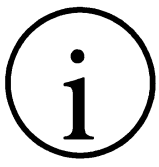

NOTES !

At the time of the publication of this *User Manual*, the software version is **V. 1.07**. ‖

This *Manual* revision No. 3 replaces and cancels the publication MU-78-01E, revision 2, as well as MU-78-11E, Revision 0. ‖

The modifications carried out against the previous revision of this publication are indicated with ‖ on the right margin.

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CHAPTER 1: INTRODUCTION

1.1 GENERAL

The electrofusion units of the range **BEAT HF** are designed to carry out polyethylene (PE) and polypropylene (PP) pipe/fittings joints through electrofusion fittings with a range of 8 V to 48 V electrofusion voltage.
This *User Manual* applies to all commercialized models:

BEAT HF-MV Electrofusion unit which the electrofusion parameters are entered manually. No traceability.

BEAT HF-2 Electrofusion unit that the electrofusion parameters can be entered manually or by bar-code system. No traceability.

BEAT HF (Tr) Electrofusion unit with manual and automatic (via scanner) enter of the electrofusion parameters and with traceability.

The **BEAT HF-MV** electrofusion unit receives the relevant data of the fitting via operator's manual introduction: VOLTAGE and TIME from the fitting manufacturer. Take into account that some fitting manufacturers provide different fusion times according to ambient temperature. Refer to the fitting manufacturer's instructions.

The **BEAT HF-2,** in addition of the data manual input is also able to enter the electrofusion parameters by means of a bar-code automatic recognition system.

The **BEAT HF** (**Tr** version), receives the relevant data of the fitting via the bar code system and also by operator's manual input and is provided with full traceability, so it allows the data entry such as operator's ID, job order ID, additional data and fitting traceability. The unit stores all this data in its memory for further treatment.

The technical data contained in this *Manual* are purely informative and may be changed at anytime. ACUSTER GLOBAL, S.L. declines all responsibility for claims arising from misuse of the data contained herewith and/or errors or omissions detected after publication.
This *Manual* must be considered as part of the unit.

1.2 DESIGN SPECIFICATIONS

The electrofusion units **BEAT-HF** are designed according to the following specifications:

- ISO 12176-2 (all models) — Equipment for fusion jointing polyethylene systems. Part 2: Electrofusion.
- ISO 12176-3 (model Tr) — Equipment for fusion jointing polyethylene systems. Part 3: Operator's badge.
- ISO 12176-4 (model Tr) — Equipment for fusion jointing polyethylene systems. Part 4: Traceability coding.
- ISO/TR 13950 (models 2 & Tr) — Plastic pipes and fittings: automatic recognition of electrofusion systems.

According to model, the **BEAT HF** accepts all the identifications which correspond to the above listed Specifications. All the fittings can be fused by electrofusion if the manufacturer encloses the programmed bar code system in accordance with ISO/TR 13950.

1.3 GENERAL INFORMATION

The development, documentation, production, tests and shipping of the products herewith described have been made:

- Complying with the respective safety rules, and
- In accordance with the requirements of quality guarantee.

WARNING !
The electrofusion control box can only be opened by Grupo Acuster After-sales Service. In the case of the back cover opening or coming apart, parts of electrical components which are not covered may be left exposed.
Only qualified personnel are authorised to intervene both for fusion and repairs. These qualified personnel must be familiar with all the safety measures, potential dangers and maintenance rules described in this *Manual*.
The safe use of the products described requires an appropriate means of transport, storage, installation and use, a careful handling and the preestablished periodical maintenance follow-up.

1.4 UNIT IDENTIFICATION

1.4.1 **Serial Number Stamping:**

The electrofusion units **BEAT HF** are identified by means of their own identification plate.

QUALITY CONTROL

MACHINE No.

MAINTENANCE REVISIONS

MANUFACTURER'S ADDRESS

ACUSTER GLOBAL S.L.
CONTROL DE CALIDAD
MAQUINA Nº
REVISIONES
Juan de la Cierva, 1 - Políg. Ind. del sud-oest
Telf. +34 93 4703070 - Sant Just Desvern (Barcelona)

Figure 1

The quality control identification plate includes the fusion control box serial number. The plate includes room for future maintenance date stamping.

NOTE: *Because the service control is carried out via the service menu of the unit, the model 2015 does not include this plate.*

1.4.2 **"CE" marking:**

The electrofusion unit is supplied with the appropriate plate with the "CE" mark, as the European Community norm indicates on the new Machine Security Regulation (Board 98/37/CE, dated 22nd June 1998).

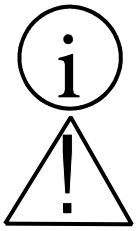
ACUSTER GLOBAL S.L.
C E
MODELO:
Nº SERIE
Juan de la Cierva, 1 - Políg. Ind. del sud-oest
Telf.+34 93 4703070 - Sant Just Desvern (Barcelona)-SPAIN

Figure 2

1.5 MEASURES OF PROTECTION AGAINST ACCIDENTS

1.5.1 Safety alert symbols:

This *User Manual* employs the following safety alert symbols:



Indicates information, considered important, but not hazard-related.

When appears this hazard alert sign in this manual, carefully read what is says.

Indicates a hazardous situation that, if not avoided, will result in death or serious injury.

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

1.5.2 Safety measures and dangers:

Please go by the following security measures:

- Keep the fusion control box out of the reach of non authorised personnel, non qualified personnel and children.
- Protect the control unit from water, rain, snow, etc.
- Protect the electrofusion cables and the cable that goes to the power supply of cutting objects.
- All damaged cables must be replaced immediately being supplied by the After-Sales Service of Grupo Acuster.
- Always plug the control box to a power supply provided with differential and ground connection.
- Do not expose the fusion control box to heavy weights. All slight damage caused to the external frame or to other elements will have to be replaced immediately by the After-Sales Service of Grupo Acuster.
- The fusion control boxes which are not being used must be kept out of the reach of the non authorised personnel. They will have to be kept in rooms of low humidity degrees and of restricted access.
- Always use adequate working clothes.
  For outside work, it is recommended to use rubber gloves and boots with insulating soles. In wet areas, this advice is essential.
- Before using the fusion control box, its external condition will have to be checked, as well as its working condition. All components must be correctly assembled in order to guarantee the correct functioning of the unit.
- The damaged components must be repaired or replaced by the After-Sales Service of Grupo Acuster.
- The fusion control box can only be opened by the After-Sales Service of Grupo Acuster.
- Should the fusion control box not work properly, it will have to be sent immediately to the After-Sales Service of Grupo Acuster.

1.6 DECLARATION "CE" OF CONFORMITY

ACUSTER GLOBAL, S.L.
Juan de la Cierva, 1
Polígono Industrial del Sud-Oest
08960 Sant Just Desvern (Spain)

declare under our sole responsibility that the electrofusion units **BEAT HF**, to which this declaration relates is in conformity with the following Directives and also the following relating standards:

Directive	Related Specification	Model
2006/95/CE *Low Voltage*	EN 60335-1	**BEAT HF**
2004/108/CE *Electromagnetic compatibility*	EN 61000-6-2; EN 61000-6-3	
2002/95/CE ROHS	EN 62321-1	
2002/96/CE WEEE		
	ISO 12176-2	
	ISO 12176-3	**BEAT HF-Tr**
	ISO 12176-4	**BEAT HF-Tr**
	ISO/TR 13950	**BEAT HF-2** **BEAT HF-Tr**

Sant Just Desvern, 15th September 2008

Jaume Puig
General Manager

1.7 GUARANTEE

Guarantee Declaration:

All the electrofusion units **BEAT HF** are manufactured from high quality material and have been subjected to rigorous tests for resistance and working order as well as passing all the quality control tests required by the applicable normatives (see "CE" Declaration of conformity).
Regardless of whether an incident might occur during the period of guarantee, we recommend careful reading of the following general guarantee conditions.

General conditions of Guarantee:

1. ACUSTER GLOBAL, S.L. guarantees that this product has no manufacturing defect at the time of its purchase and extends this guarantee for the period of TWO years.

2. If the product proves defective during this period, due to the materials or its assembly, it will be repaired free of charge, including the cost of materials and labour at Grupo Acuster's Technical Service.

3. The Guarantee is not valid in the following cases:

   When the fault in the product is a result of:

   - Abuse or incorrect use of the unit.
   - Not following the instructions specified in this *User Manual* for connecting to a group generator.
   - Repairs carried out without authority from Grupo Acuster (the taking apart or breaking of the unit's seal immediately renders the guarantee invalid).
   - Accidents, natural disasters (including lightning, water action etc) as well as any cause beyond Grupo Acuster's control.

4. In all claims against this guarantee, information relating to the model, date of purchase, Serial number and any other additional information must at all times be stated.

CHAPTER 2: UNIT'S DESCRIPTION

2.1 GENERAL

The electrofusion units **BEAT HF** are externally made up of a metal casing with a rear cover which constitutes the power unit, in which is mounted outside a heatsink and an optional fan.
The **model 2008** (*Figures 3a, 3b and 3c*), the metal casing is assembled on a stainless steel tubular frame which allows to adjust to the desired angle, a master switch, USB/A and USB-B connectors (**BEAT HF-Tr** only) and serial connector for the different applications, the mains and electrofusion cables (all of three replaceable without opening the casing). The front part is formed by a membrane which incorporates tactile push-buttons to enter the data and a back-lit graphic LCD display.
Inside, the unit is formed by a power board, a processor board (CPU), in addition to all of the electronics necessary for the electrofusion process, current and voltage controls.

Figure 3a: general view

Figure 3b: side-bag detail

Figure 3c: connectors detail (USB for BEAT HF-Tr only)

The **model 2015** (*Figure 3d*) the metal casing is more compact and has a carrying handle, which is in turn serving as cables reel. On the front the main switch, a serial port and a USB/A port are mounted.

Figure 3d: general view model 2015 (USB port for BEAT HF-Tr only)

2.2 FRONT PART

The front part of the **BEAT HF** electrofusion unit is formed by a silkscreened plastic membrane which incorporates membrane type tactile push-buttons. The display is located on the upper left side.
Where:

1 Tubular frame
2 Transport handle
3 Membrane with push-buttons
4 Display
5 <START> key
6 <STOP> key
7 Four-arrow keys
8 Customized front
9 Main switch
10 Connector USB/A (BEAT HF-Tr)
11 Connector D-Sub 9 pins (no for MV)

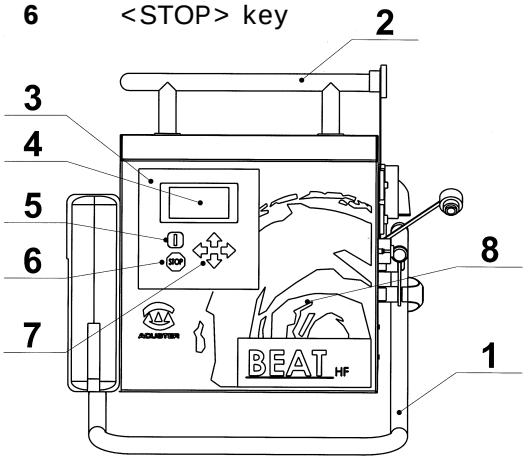


Figure 4a (model 2008)

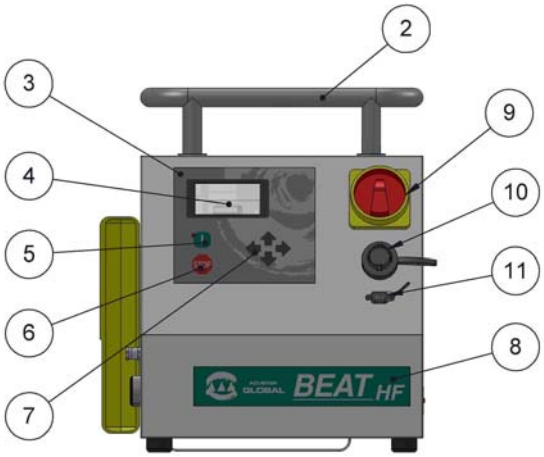


Figure 4b (model 2015)

2.3 SIDES

On the right side of the **BEAT HF** (looking at from the front), the following elements are located:

1 Master switch
2 USB/A connector (BEAT HF-Tr)
3 USB/B connector (BEAT HF-Tr)
4 Serial connector
5 CE plate
6 Service revision plate

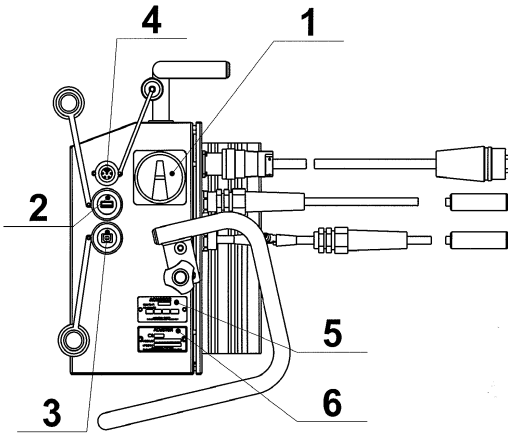


Figure 5a (model 2008)

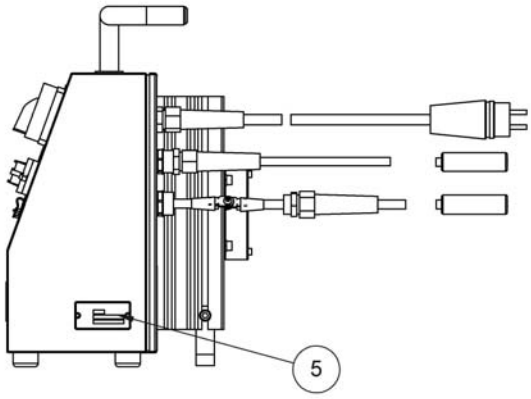


Figure 5b (model 2015)

On the left side of the **BEAT HF** electrofusion unit (looking at it from the front), the following elements are located:

1 Ambient temperature sensor
2 Buzzer
3 Side-bag

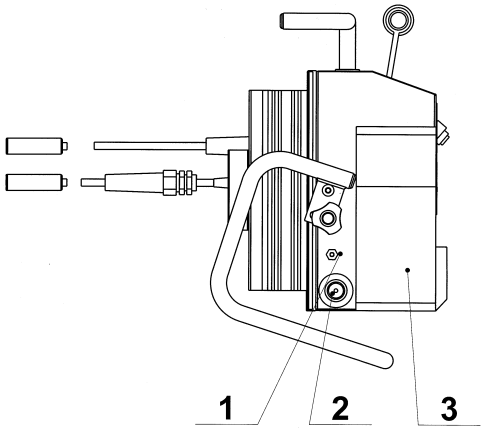


Figure 6a (model 2008)

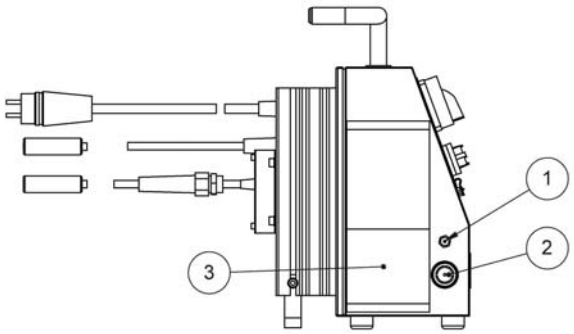


Figure 6b (model 2015)

2.4 REAR

On the rear cover of the **BEAT HF** electrofusion unit, the following elements are located:

1 Power cable (with connector)
2 Electrofusion cables (replaceable)
3 Technical specifications sticker
4 Seal sticker
5 Heatsinks
6 Fan (acc. to model)

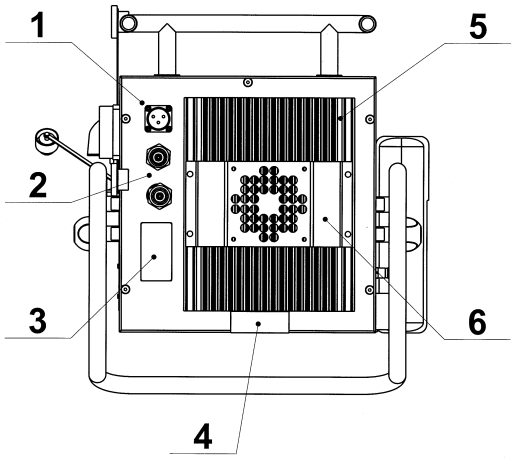


Figure 7a (model 2008)

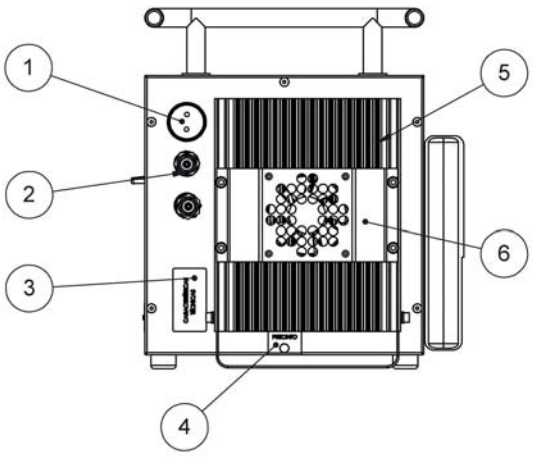


Figure 7b (model 2015)

CHAPTER 3: MODE OF USE

3.1 FUSION PROCEDURE FOR ELECTROFUSION FITTINGS

3.1.1 **Introduction:**

The assembly jobs and the PE network electrofusion should always be carried out by specifically trained personnel and strictly following the manufacturer's instructions, both for the fittings as well as the fusion equipment. In the gas sector in Spain, to give an example, this training is given by specialised centres adhering to technical specifications edited by Sedigás and which are available in pdf format at www.sedigas.es (PE welder's certification).

3.1.2 **Scraping pipe surfaces:**

First clean the surface to be scraped with a clean lint-free dry cloth. The length to be cleaned will depend on the size of the fitting to be used, adding a minimum additional margin of 50 mm on each end.
Scrape the area of the pipe or pipes where the fitting to be joined will be installed. The length of the scraping should be greater than that of the fitting.

IMPORTANT !
The scraping of the pipe should generate swarfs. This ensures the elimination of the pipe's most exterior oxidation, which would otherwise lead to a dissatisfactory electrofusion joint.

Next clean the scraped area with a de-greasing towel or with a clean, dry white cloth (which does not shed lint), dampened with isopropanol or recommended PE solvent.

3.1.3 **Fitting installation:**

For joints of *tapping saddles* and *branch saddles*, place a rounder on each side of the scraped area if the fusion is performed over a bar pipe. If the joint is performed on a pipe from a roll, the placement of an aligner-rounder tool is indispensable. Next install the fitting on the pipe.
If the fitting to be jointed is a *coupler*, *reducer* or *elbow*, remove it from its wrapping, and without touching its interior, install it on the scraped and cleaned pipe. Now assemble the aligner and the other specially-prepared pipe or fitting.
Electrofusion joints should only be carried out by qualified staff.
Protect the area where electrofusions area carried out from adverse weather conditions, such as rain, snow or wind. Admissible temperatures range from -10°C to +40°C. In order to achieve a uniform temperature in the whole diameter of the pipes, protect the fusion area against sunrays or bad weather.
The quality of the joint depends substantially on the care taken in the preliminary preparation tasks (scraping, de-greasing, etc).

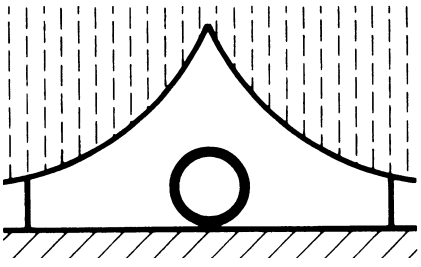


Figure 8

3.2 UNIT PREPARATION

3.2.1 **Unit connection:**

DANGER Connect the unit to a 230 V ± 15%/50-60 Hz mains source of alternating current. For generator group specifications, please refer to *CHAPTER 6: TECHNICAL CHARACTERISTICS*.

IMPORTANT NOTES !
Connection to a generator: the generator electric connection where the electrofusion unit is plugged in must be normalized and fitted with differential and ground pin. Refer to the generator's User Manual. **Connection to the mains:** the electric installation of the building where the electrofusion unit is plugged in must be fitted with earth connection as well as circuit breaker type D (EN 60898).
Do not unplug the mains by pulling on the cable.

3.2.2 **Positioning of the unit in the work area (model 2008):**

The control unit may be positioned according to the needs of the operator. It can be in a fully vertical position (or even slightly tilted backwards) or tilted up to 20º off vertical.

Figure 9a: Fully vertical position

Figure 9b: Maximum tilted position

To alter the tilt of the unit casing, loosen the two side knobs, position according to need and then tighten both knobs once again.

3.2.3 **Start up of unit:**

Set the master switch in the On position.

IMPORTANT NOTES !
Because the unit allows the use of an optic pen or scanner indistinctly, connect the barcode reader to be used before switching on the unit so it will be recognized.
Checking the terminals of the connecting cables to the fitting before starting up the unit is advised. There are different types of adapters depending on the type of fitting to be used. Refer to clause 3.4.1 **Fitting connection**.

The display backlight will be enabled, an acoustic signal heard and the following information will appear:

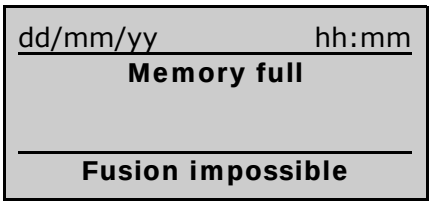
Model: HF-1=BEAT HF-MV;
HF-2=BEAT HF-2;
BEAT-HF=BEAT HF-Tr.
S.N. xxxx: unit serial number
V. v.vv: software version

Once the display time has elapsed (3 seconds), the unit will display the corresponding screen (depending on the setup and initial messages).

Possible initial messages:

MEMORY FULL (BEAT HF-Tr only)

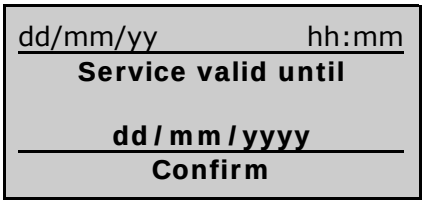
If the capacity of the memory is already full, the display will show the following message:



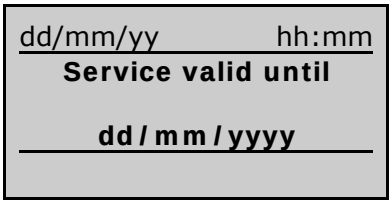
Export or/and eraser fusion records: refer to clause 3.5.3 of this *Manual*.

TECHNICAL MACHINE SERVICE

If the programmed warning date for the Technical Machine Service in the unit has expired, the display will show:



The unit will emit two acoustic signals and a message will appear in the display along with the date of the next check.



If the date **dd/mm/yyyy** has not expired yet, press <START> to **Confirm** and proceed to the next screen (regardless of the existing locking set up of the unit).

If the date **dd/mm/yyyy** has already expired but the unit is set up without locking, by pressing <START> you will be able to move to the next screen. However, if the unit is set up with locking, the display screen won't show the **Confirm** option and subsequently the unit will not be able to be used until the TMS has been carried out.

3.2.4 **Using the barcode reader (not for BEAT HF-MV):**

If you read the different data (operator's ID, job ID, fitting, pipe, etc) by using optical means (scanner), connect the reader device to the corresponding connector and put it in front of the barcode data.

Laser scanner: When reading, the con nected scanner emits a red laser ray of a particular length. To read the barcode data, place the scanner so that the laser ray coincides longitudinally with the barcode. The distance will depend on the size of the barcode to be read. Once the scanner has been placed in position, the laser ray will stop flashing and remain fixed. When this happens, press any of the three buttons on the top of the scanner.

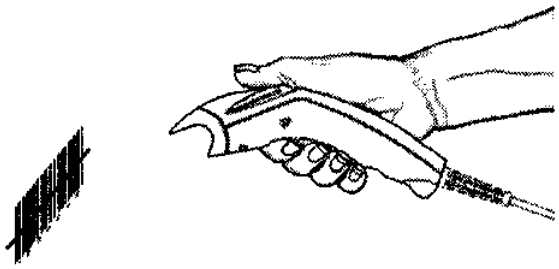


Figure 10b: Example of using laser scanner

ATTENTION !
The scanner should be correctly setup. In case no data is captured by the device, carry out the following barcode reading.

NOTE !
If none of the options on the setup menu have been enabled on BEAT HF-Tr, such as operator's ID, job's ID, additional data or traceability, skip clause 3.3 - TRACEABILITY and go directly to clause 3.4 - ELECTROFUSION PROCESS.

MODEL BEAT HF-Tr

3.3 TRACEABILITY

3.3.1 Introduction:

As defined in ISO 12176-4, traceability is the ability to create a trace of the history, the purpose or the location of information, by means of records.
If all or some of the traceability options available in the unit are required, refer to clause 3.5 - ACCESS TO OTHER MENUS, where selecting **Setup** / **Options** the necessary traceability functions can be enable. Those are:

- Operator identification
- Job identification
- Additional data
- Traceability

3.3.2 Entering the operator number: only if enabled

If the entry of operator's ID is enabled, the unit allows the identification to have different setups:

• *Optional setup by operator*:
- It can be omitted by selecting **Skip over** and pressing the <START> button.
- It can be introduced by using a barcode or manually.
- It does not check for expiry nor attributes.

• *Obligatory setup by operator*:
- Identification must be introduced without choice.
- It can be introduced by using a barcode or manually.
- It does not check for expiry nor attributes.

• *Operator's setup according to ISO 12176-3*:
- Identification must be introduced without choice.
- It can be introduced by using a barcode or manually.
- Expiry and functions are checked.

• *Setup of entry time*:
- If it is setup as OFF, the operator's identity will be saved throughout the day until zero hour of the next day. The identity can be modified or erased at any stage.
- If it is setup as ON, the operator's identity will be lost each time the unit is turned off. It will need to be reintroduced.

The following screen will appear when the unit is turned on:

If an operator's identity has been previously introduced:

Initial screen:

dd/mm/yy hh:mm
Operator
A 1234/724/SG
Confirm

Press either the ⬆ or ⬇ arrow once to select the **Erase** screen.

Next screen:

dd/mm/yy hh:mm
Operator
A 1234/724/SG
Erase

Press <START> to confirm and go to the next screen or select **Erase** if there is a need to alter an operator's identity.

If an operator's identity has not previously been introduced or erased:

Initial screen ❶:

dd/mm/yy hh:mm
Operator

Read barcode

Press either the ⬆ or ⬇ arrow once to select the **Manual edition** screen.

Next screen ❷:

dd/mm/yy hh:mm
Operator

Manual edition

Next screen ❸:

dd/mm/yy hh:mm
Operator

Edit barcode

Press either the ⬆ or ⬇ arrow once to select the **Edit barcode** and **Skip over** screens.

Final screen ❹:

dd/mm/yy hh:mm
Operator

Skip over

❶ On the *initial* **Read barcode** *screen*, the unit remains on hold while the operator's barcode is read via optic pen or scanner.

dd/mm/yy hh:mm
Operator
A 1234/724/SG
Confirm

When the identity is introduced, the operator's decoded number, country and certifying organisation are shown.

If the barcode or reading were erroneous.

dd/mm/yy hh:mm
Operator

Wrong data

If a barcode is entered incorrectly, the unit emits two acoustic signals and shows a **Wrong data** message on the screen. Either press <STOP> or <START> to go to the **Read barcode** screen and repeat the entry procedure.

Once the identity has been processed successfully, press <START> to confirm and to go to the next screen.

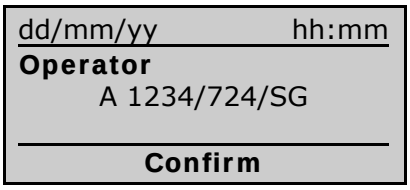
❷ If the operator's identity is not introduced by means of a barcode, go to the next option **Manual edition**. When <START> is pressed, a cursor will appear in the first position on the left of the field to be completed.

dd/mm/yy hh:mm
Operator

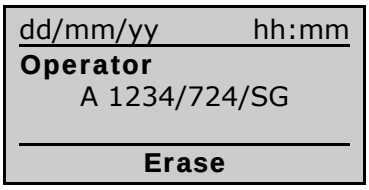
Manual edition

Manually introduce by using the arrow buttons. Maximum 16 alpha-numeric characters. Characters accepted: capital letters, 0 to 9 and the symbols . , + * < > / space - ( ).

Press the ➡ and ⬅ arrows to move the cursor to another field and the ⬆ and ⬇ arrows to select the values. Press <START> to confirm and go on to the next screen.

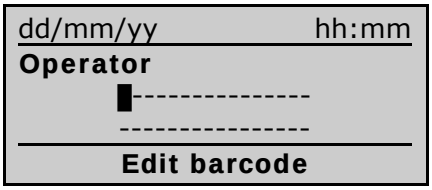


Press either the ⬆ or ⬇ arrow once to select the **Erase** screen.



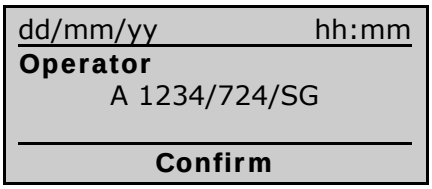
Press <START> to confirm and go on to the next screen or select **Erase** if the operator's identity needs to be altered. Go back to **Read barcode**.

❸ Select the **Edit barcode** option by pressing either the ⬆ or ⬇ arrow when the operator's identity needs to be introduced manually according to the ISO 12176-3 structure. When <START> is pressed a cursor will appear in the first position on the left of the field to be edited.



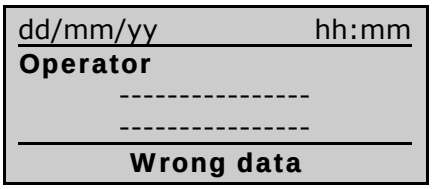
Manually introduce the 30 digits corresponding to the identity by using the arrow buttons.

Press the ➡ and ⬅ arrows to move the cursor to another field and the ⬆ and ⬇ arrows to select the values.
Press <START> to accept and to go on to the next screen.



The operator's number, country and certifying organisation are shown.

Press <START> to accept and go on the next screen.
If the code introduced manually were incorrect.



If a code is entered incorrectly, the unit will emit two acoustic signals and the message **Wrong data** will be shown on the screen. Press <STOP> to go to the **Read barcode** screen. Select **Edit barcode** and repeat the entry procedure.

Once the identity has been entered correctly, press <START> to confirm and to go on to the next screen.

❹ If the entry of the operator's identity is set up as optional, this identification can be omitted by selecting the **Skip over** option.
Press <START> to go to the next screen.

3.3.3 **Entering the job number: only if enabled**

If the entry of the job is enabled, the unit allows different setups of entry:

• *Optional set up of job*:

- It can be omitted by selecting the **Skip over** and pressing the <START> button.
- It can be entered using a barcode or manually.

• *Obligatory job set up*:

- It must be entered without choice.
- It can be entered by using a barcode or manually.

• *Set up of time of entering*:

- If it is set up as OFF, the job number will be saved throughout the day until zero hours of the next day. The job number can be modified or erased at any stage.
- If it is set up as ON, the job number will be lost each time the unit is turned off. It will need to be reintroduced.

After entry of the operator ID, or not, or if not enabled, when the unit is turned on the following screen will appear:

If a job number has been previously introduced:

Initial screen:

dd/mm/yy hh:mm
Job
ABCDEFGHIJKLMNOP
Confirm

Press either the ⬆ or ⬇ arrow once to select the **Erase** screen.

Next screen:

dd/mm/yy hh:mm
Job
ABCDEFGHIJKLMNOP
Erase

Press <START> to confirm and go to the next screen or select **Erase** if the job number needs to be altered.

If a job number has not been introduced or erased previously:

Initial screen❶:

dd/mm/yy hh:mm
Job

Read barcode

Next screen ❷:

dd/mm/yy hh:mm
Job

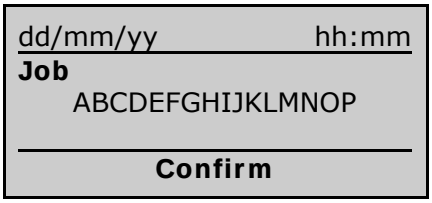
Manual edition

Final screen ❸:

dd/mm/yy hh:mm
Job

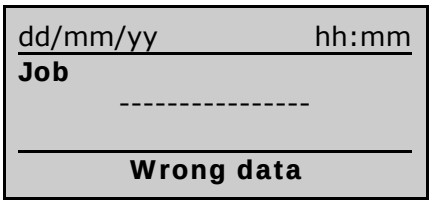
Skip over

❶ On the initial screen **Read barcode**, the unit remains on hold while the barcode of the job number is being read using the optic pen or scanner.



The decoded job number is shown.

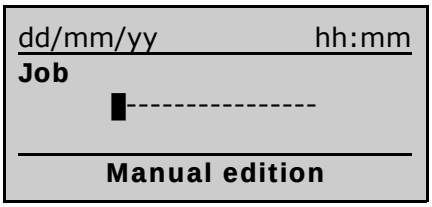
If the barcode or reading were erroneous.



If a barcode is entered incorrectly, the unit emits two acoustic signals and shows a **Wrong data** message on the screen. Either press <STOP> or <START> to go to the **Read barcode** screen and repeat the entry procedure.

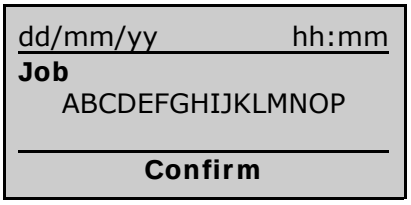
Once the identity has been decoded correctly, press <START> to confirm and to go on to the next screen.

❷ If a job number has not been entered by means of a barcode, press either the ⬆ or ⬇ arrow once to select the **Manual edition** option on the next screen. By pressing <START> a cursor will appear in the first position on the left of the field to be edited.

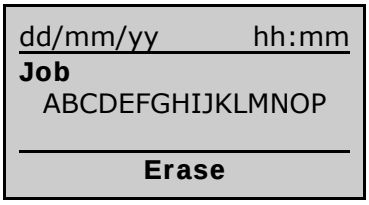


Manually introduce by using the buttons of the arrows. Maximum 16 alpha-numerical characters. Characters accepted: capital letters, 0 to 9 and the symbols . , + * < > / space - ( ).

Press the ➡ and ⬅ arrows to move the cursor to another field and the ⬆ and ⬇ arrows to select the values. Press <START> to accept and to go to the next screen.



Press either the ⬆ or ⬇ arrow once to select the **Erase** screen.



Press <START> to accept and to go to the next screen or select **Erase** if the job number needs to be altered. Go back to **Read barcode**.

❸ If the set up for job number entry is optional, the entry step can be omitted by selecting the **Skip over** option.
Press <START> to go to the next screen.

3.3.4 **Entering the additional data: only if enabled**

After identifying the operator and the job, or not, or if disabled, the following screen will appear when the unit is turned on:

If an identity of additional data has been entered previously:

Initial screen:

dd/mm/yy hh:mm
Additional data
ABCDEFGHIJKLMNOP
Confirm

Press either the ⬆ or ⬇ arrow once to select the **Erase** screen.

Next screen:

dd/mm/yy hh:mm
Additional data
ABCDEFGHIJKLMNOP
Erase

Press <START> to accept and go to the next screen or select **Erase** if the identity of the additional data needs to be altered.

If the identity of the additional data has not been previously entered or erased:

Initial screen❶:

dd/mm/yy hh:mm
Additional data

Read barcode

Next screen ❷:

dd/mm/yy hh:mm
Additional data

Manual edition

Final screen❸:

dd/mm/yy hh:mm
Additional data

Skip over

❶ On the initial **Read barcode** screen, the unit remains on hold while the additional data is read using an optic pen or scanner. When the identity is entered:

dd/mm/yy hh:mm
Additional data
ABCDEFGHIJKLMNOP
Confirm

Code 128 up to 16 characters. The additional data decoding is shown.

If the barcode or reading were erroneous.

dd/mm/yy hh:mm
Additional data

Wrong data

If the barcode is entered incorrectly, the unit emits two acoustic signals and a **Wrong data** message appears on the screen. Press either <STOP> or <START> to go to the **Read barcode** screen and repeat the procedure.

Once the correct identity has been correctly read, press <START> to accept and go to the next screen.

❷ If the identity of the additional data is not introduced by means of a barcode, press either the ⬆ or ⬇ arrow once to select the **Manual edition** option on the next screen. When <START> is pressed, a cursor will appear in the first position on the left of the field to be edited.

dd/mm/yy hh:mm
Additional data
▮----------
Manual edition

Manually introduce by using the buttons of the arrows. Maximum 16 alpha-numerical characters. Characters accepted: capital letters, 0 to 9 and the symbols . , + * < > / space - ( ).

Press the ➡ and ⬅ arrows to move the cursor to another field and the ⬆ and ⬇ arrows to select the values. Press <START> to accept and to go to the next screen.

dd/mm/yy hh:mm
Additional data
ABCDEFGHIJKLMNOP
Confirm

Press either the ⬆ or ⬇ arrow once to select the **Erase** screen.

dd/mm/yy hh:mm
Additional data
ABCDEFGHIJKLMNOP
Erase

Press <START> to accept and to go to the next screen or select **Erase** if the additional data identity needs to be altered. Go back to **Read barcode**.

❸ If the set up for additional data is optional, this identification process can be omitted by selecting the **Skip over** option.
Press <START> to go to the next screen.

3.3.5 **Entering the traceability (ISO 12176-4): only if enabled**

Once the operator, job and additional data ID have been entered, or not, or if disabled, the following screen will appear when the unit is turned on:

Initial screen ❶:

dd/mm/yy hh:mm
Traceability

Read barcode

Next screen ❷:

dd/mm/yy hh:mm
Traceability

Edit barcode

Final screen ❸:

dd/mm/yy hh:mm
Traceability

Skip over

❶ On the initial **Read barcode** screen, the unit remains on hold while the fitting barcode is read using an optic pen or scanner. When the identity is entered:

dd/mm/yy hh:mm
SOCKET
PE1OO AG
63 SDR11
Confirm

Code 128 of 26 characters. The fitting's decoded traceability is shown.

If the barcode or reading were erroneous.

dd/mm/yy hh:mm
Traceability

Wrong data

If the barcode is entered incorrectly, the unit emits two acoustic signals and a **Wrong data** message appears on the screen. Press either <STOP> or <START> to go to the **Read barcode** screen and repeat the procedure.

Once the identity has been correctly read, press <START> to accept and go to the next screen.

dd/mm/yy hh:mm
Component 1

Read barcode

dd/mm/yy hh:mm
Component 1

Edit barcode

dd/mm/yy hh:mm
Component 1

Skip over

On the **Read barcode** screen the unit remains on hold while the component barcode is being read using an optic pen or scanner. If the data is not entered using a barcode, press either the ⬆ or ⬇ arrow to select the **Edit barcode** or **Skip over** option.

*On **Read barcode**:*

dd/mm/yy hh:mm
COILED PIPE
PE100 RH
63 SDR11
Confirm

Left screen: decoding of the barcode of Component 1. Right screen: Manual input of code.

*On **Edit barcode**:*

dd/mm/yy hh:mm
Component 1
▮----------

Edit barcode

Press <START> to accept or confirm and go to the next screen.

*On **Read barcode**:*

dd/mm/yy hh:mm
COILED PIPE
PE100 RH
63 SDR11
Confirm

Left screen: decoding of the barcode of Component 2. Right screen: Manual input of code.

*On **Edit barcode**:*

dd/mm/yy hh:mm
Component 2
▮----------

Edit barcode

Press <START> to accept or confirm and go to the next screen.

If the data for Component 1 and Component 2 are optional or not available, this identification process can be omitted by selecting the **Skip over** screen.

❷ If the traceability ID is not entered by means of a barcode, press either the ⬆ or ⬇ arrow once to select the **Edit barcode** option on the next screen. When <START> is pressed, a cursor will appear in the first position on the left of the field to be edited.

dd/mm/yy hh:mm
Traceability
▮----------

Edit barcode

Manually introduce the 26 numerical characters by using the arrow buttons.

Press the ➡ and ⬅ arrows to move the cursor to another field and the ⬆ and ⬇ arrows to select the values. Press START> to accept and to go to the next screen.
If the barcode or reading were erroneous.

dd/mm/yy hh:mm
Traceability

Wrong data

If a code has been entered incorrectly, the unit will emit two acoustic signals and the **Wrong data** message will appear on the screen. Press either <STOP> or <START> to go to the **Read barcode** screen and repeat the procedure.

Once the identity has been correctly read, press <START> to accept and go to the next screen.
To introduce the Component 1 and Component 2, please refer to point ❶ in this section.

3.4 ELECTROFUSION PROCESS

3.4.1 **Fitting connection:**

Connect the unit cable connectors in the fitting terminals to be jointed. The contact surfaces of both the fitting's terminals and the cable connectors must always be clean.

NOTE !	
We advise you to always use adapters, even though the connection to the fitting may be made directly. Doing so, the cable terminals are protected, do not wear out, burn, etc.	
It is recommend to refrain from electrofusion if the exterior temperature is below -10°C or above +40°C.	

3.4.2 **Detection of possible initial errors:**

Before the screen asking for the electrofusion data appears, the unit might detect the following incidents:

- **Message of the state of the internal memory (BEAT HF-Tr only):**

If there are 50 or less entries left before the memory is full, the following message will appear:

dd/mm/yy hh:mm
Remaining fusions xx
Confirm

Where **xx** corresponds to ≤50 fusion entries.

Press the <START> key to go to the next screen.

- **Input voltage / frequency outside margin:**

With the unit on the initial screen, a check is done of the input voltage.

nnnn hh:mm
Fusion data
vvv V ff Hz tt°C
Read barcode

Where the following information appears:

nnnn:	Fusion number
hh:mm:	Time
vvv V ff Hz:	Input voltage and frequency
tt°C:	Room temperature

If the voltage registered by the unit were below or above the permitted tolerance (180-270 V for nominal of 230 Vac), the following messages will appear on the display screen (depending on the case):

nnnn hh:mm
Power supply error
vvv V ff Hz tt°C
Fusion impossible

Appears when the input voltage or frequency is beyond that tolerance:
Maximum limit: 270 Vac / 70 Hz
Minimum limit: 180 Vac / 40 Hz

Check the power source to correct the fault. It is not necessary to turn the unit on and off using the main switch to refresh the initial value since if the minimum limit is attained, the unit restarts at 200 Vac and 45 Hz (as appropriate) and if the maximum limit is reduced, the unit restarts at 250 Vac and 65 Hz (as appropriate).
In case the voltage and frequency displayed on the screen were **0V** and **0Hz**, there is an internal communication error. Contact to the Grupo Acuster's After-Sales Service.

• Room temperature beyond the limits:

If a room temperature beyond the established limits is detected (in the standard setup they are -15ºC and +50ºC) or if the temperature probe has broken down, the following message will appear when the unit is turned on:

dd/mm/yy hh:mm
Wrong temperature
XXX°C
Confirm

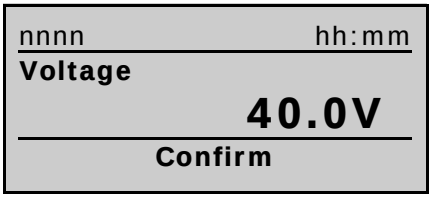
When turned on, the unit will emit two acoustic signals and a **Wrong temperature** message will appear on the screen. **xxx** corresponds to the room temperature read or if it is 255 it means the probe has broken down or is not connected.

Press <START> to accept. The screen shown will correspond to the manual input of data (using the keyboard).

MODEL BEAT HF-MV

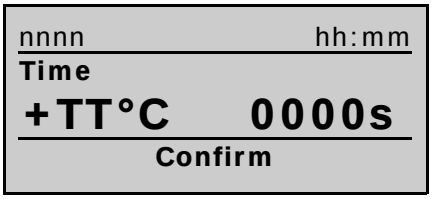
3.4.3 Entering the electrofusion data in the unit:

On the initial screen:



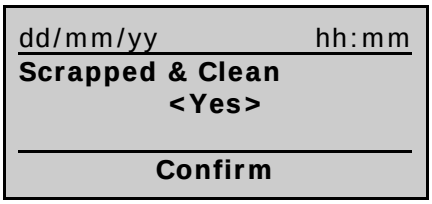
The display will show the voltage of the electrofusion of **40.0V** by default or that used in the previous electrofusion cycle (if the unit has not been turned off). **The electrofusion voltage must be between 8 and 48 V.**

If the fitting's electrofusion voltage is not 40.0V, change it by pressing the ⬆ arrow to increase the voltage and the ⬇ arrow to reduce it. The values displayed on the screen are shown in steps of 0.5V.
Press <STOP> to go back to the previous screen or <START> to continue.



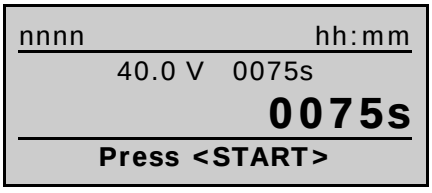
The display will show the room temperature **TT°C** and the initial counter as **0000s** or the time used in the previous electrofusion cycle (if the unit has not been turned off). **Maximum time of 5940 seconds allowed (99 minutes).**

Introduce the time indicated by the fitting manufacturer, bearing in mind correction made according to the room temperature (according to the manufacturer). Press the ➡ and ⬅ arrows to move the cursor to another field and the ⬆ and ⬇ arrows to select the values.
Press <STOP> to go back to the previous screen or <START> to continue.



Confirmation is requested of whether the scraping and de-greasing of the pipes has been done.

Press <STOP> to go back to the initial screen or <START> to continue.



On the top line, the fusion parameters introduced manually will be shown.

0075s: Time of electrofusión (*)

(*) depending on the room temperature, the time to be entered can vary in relation to the nominal time of the fitting. Consult the fitting manufacturer's information.
Press <STOP> to go back to the initial **Fusion data** screen or <START> to continue.

Go to clauses 3.4.5: **Electrofusion cycle** and 3.4.6: **Possible interruptions in the fusion cycle.**

MODELS BEAT HF-2 & BEAT HF-Tr

3.4.4 Entering the electrofusion data in the unit:

Initial screen:
Note for model BEAT HF-Tr: if the input of data related to Operator, Job, Additional data and Traceability is disabled, or if enabled, once validated, the following screen will appear:

nnnn	hh:mm
Fusion data	
vvv V ff Hz tt°C	
Read barcode	

Read barcode is displayed by default. Press either the ⬆ or ⬇ arrow to select the **Manual fusion** or **Edit barcode** screen, as required.

Select the **Manual fusion** option when the electrofusion parameters (voltage and time) need to be introduced manually and select **Edit barcode** when the fitting manufacturer's data needs to be used and an optic pen or scanner is not available.

① *• Selecting the **Read barcode** option:*

nnnn	hh:mm
Fusion data	
vvv V ff Hz tt°C	
Read barcode	

Where the following information will appear:

nnnn:	Fusion number
hh:mm:	Time
vvv V ff Hz:	Input voltage and frequency
tt°C:	Room temperature

With the optic pen or scanner connected to the serial connector, read the barcode of the fitting.

WARNING !
Make sure you always read the barcode corresponding to the fitting to be electrofused. Should you not record the fitting's data, this could cause errors in the electrofusion process that would have repercussions on the quality and reliability of the joint.

nnnn	hh:mm
Coupler	
AG d63	
40.0 V 75s 2.25Ω	
Confirm	

Where the following information appears:

Coupler:	Type of fitting connected
AG d63:	Make and diameter of fitting
40.0V 75s 2.25Ω:	Electrofusion parameters

If the barcode or reading were erroneous.

nnnn	hh:mm
Fusion data	
vvv V ff Hz tt°C	
Wrong data	

If a barcode has been entered incorrectly, the unit will emit two acoustic signals and a **Wrong data** will appear on the screen.
Read the barcode again.

Once the data have been successfully read, the unit will remain await for confirmation to proceed. Press <STOP> to go back to the previous screen or <START> to continue.

dd/mm/yy	hh:mm
Scrapped & Clean	
<Yes>	
Confirm	

Confirmation is requested of whether the scraping and de-greasing of the pipes has been done.

Press <STOP> to go back to the initial screen of **Fusion data** or <START> to continue.

dd/mm/yy	hh:mm
Clamp	
<Yes> <No>	
Confirm	

Confirmation is requested of whether a clamp mounted on the pipes was used (for Tr model only).
The cursor remains positioned on <Yes> by default. Press the ➡ arrow to move it to <No>, depending on the situation.

Press <STOP> to go back to the previous screen or <START> to continue.

nnnn	hh:mm
40.0 V 0075s 2.25Ω	
0072s	
Press <START>	

On the top line, the fusion parameters read from the fitting's barcode will be shown.

0072s: Time of electrofusion (*)

(*) The time of the electrofusion can vary in relation to the nominal value due to the correction of the room temperature, that being included in the barcode by the manufacturer of the fitting or being beyond the temperatures not rectified.

Press <STOP> to go back to the initial **Fusion data** screen or <START> to continue.

Go to clauses 3.4.5: **Electrofusion cycle** and 3.4.6: **Possible interruptions in the fusion cycle.**

② *• Selecting the **Manual fusion** option:*

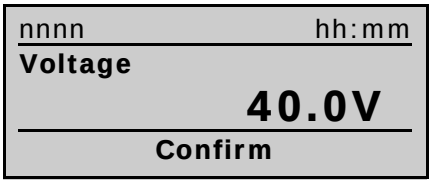
Initial screen: Note for model BEAT HF-Tr: if the input of data related to Operator, Job, Additional data and Traceability is disabled, or if enabled, once validated, the following screen will appear:

nnnn	hh:mm
Fusion data	
vvv V ff Hz tt°C	
Read barcode	

Press either the ⬆ or ⬇ arrow to select the **Manual fusion** screen (see WARNING).

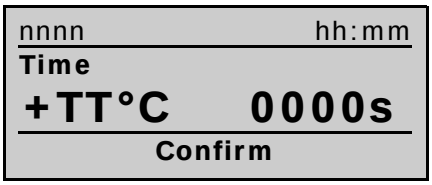
WARNING !
For model Tr the **Manual fusion** option could be disabled. If it is the case, the unit will not be able to perform manual electrofusions.

Press <START> to validate. The display will show the following screen:



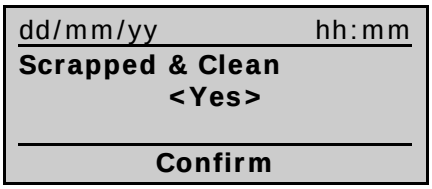
The display will show the voltage of the electrofusion of **40.0V** by default or that used in the previous electrofusion cycle (if the unit has not been turned off). **The electrofusion voltage must be between 8 and 48 V.**

If the fitting's electrofusion voltage is not 40.0V, change it by pressing the ⬆ arrow to increase the voltage and the ⬇ arrow to reduce it. The values displayed on the screen are shown in steps of 0.5V.
Press <STOP> to go back to the previous screen or <START> to continue.



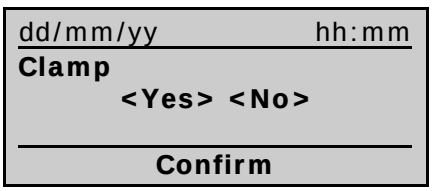
The display will show the room temperature **TT°C** and the initial counter as **0000s** or the time used in the previous electrofusion cycle (if the unit has not been turned off). **Maximum time of 5940 seconds allowed (99 minutes).**

Introduce the time indicated by the fitting manufacturer, bearing in mind correction made according to the room temperature (according to the manufacturer). Press the ➡ and ⬅ arrows to move the cursor to another field and the ⬆ and ⬇ arrows to select the values.
Press <STOP> to go back to the previous screen or <START> to continue.



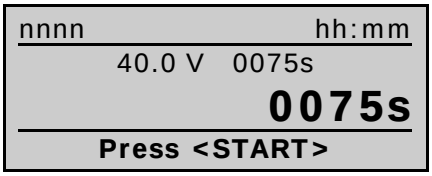
Confirmation is requested of whether the scraping and de-greasing of the pipes has been done.

Press <STOP> to go back to the previous screen or <START> to continue.



Confirmation is requested of whether a clamp mounted on the pipes was used (for Tr model only).
The cursor remains positioned on <Yes> by default. Press the ➡ arrow to move it to <No>, depending on the situation.

Press <STOP> to go back to the previous screen or <START> to continue.



On the top line, the fusion parameters introduced manually will be shown.

0075s: Time of electrofusión (*)

(*) depending on the room temperature, the time to be entered can vary in relation to the nominal time of the fitting. Consult the fitting manufacturer's information.
Press <STOP> to go back to the initial screen or <START> to continue.

Go to clauses 3.4.5: **Electrofusion cycle** and 3.4.6: **Possible interruptions in the fusion cycle.**

③ *• Selecting the **Edit barcode** option:*

Press <START> to validate. The display will show the following screen:
If the traceability ID has not been introduced by means of a barcode (for Tr model only), press either the ⬆ or ⬇ arrow once to select the *next screen* **Edit barcode** option. By pressing <START> a cursor in the first position on the left of the field to be edited will appear.

dd/mm/yy hh:mm
Fusion data
▮----------

Edit barcode

Manually introduce the connected fitting's 24 numerical characters corresponding to its barcode by using the buttons of the arrows.

Press the ➡ and ⬅ arrows to move the cursor to another field and the ⬆ and ⬇ arrows to select the values. Press <START> to accept and to go to the next screen.

WARNING !
Make sure you always read the barcode corresponding to the fitting to be electrofused. Should you not record the fitting's data, this could cause errors in the electrofusion process that would have repercussions on the quality and reliability of the joint.

nnnn hh:mm
Coupler
AG d63
40.0 V 75s 2.25Ω
Confirm

Where the following information appears:

Coupler:	Type of fitting connected
AG d63:	Make and diameter of fitting
40.0V 75s 2.25Ω:	Electrofusion parameters

If the barcode introduced were erroneous.

nnnn hh:mm
Fusion data
xxxxxxxxxxxx
xxxxxxxxxxxx
Wrong data

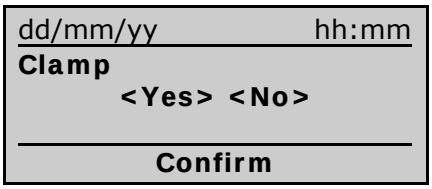
If a barcode is entered incorrectly, the unit will show a **Wrong data** message.
Enter it again.

Once the data has been successfully introduced, the unit will await for confirmation to proceed. Press <STOP> to go back to the previous screen or <START> to continue.

dd/mm/yy hh:mm
Scrapped & Clean
<Yes>
Confirm

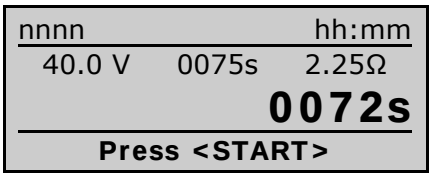
Confirmation is requested of whether the scraping and de-greasing of the pipes has been done.

Press <STOP> to go back to the initial **Fusion data** screen or <START> to continue.



Confirmation is requested of whether a clamp mounted on the pipes was used (for Tr model only).
The cursor remains positioned on <Yes> by default. Press the ➡ arrow to move it to <No>, depending on the situation.

Press <STOP> to go back to the previous screen or <START> to continue.



On the top line, the fusion parameters introduced manually will be shown.

0072s: Electrofusion time (*)

(*) the electrofusion time can vary in relation to the nominal time due to the rectification of the room temperature, if it has been included by the fitting manufacturer in its barcode and if it is beyond the temperatures not rectified.

Press <STOP> to go back to the initial **Fusion data** screen or o <START> to continue.

Go to clauses 3.4.5: **Electrofusion cycle** and 3.4.6: **Possible interruptions in the fusion cycle.**

3.4.5 **Electrofusion cycle:**

The unit has begun the electrofusion cycle. The red pilot light of the <START> push-button will flash intermittently throughout the cycle.

⚠WARNING If there is a malfunction in the electrofusion process, hot molten PE/PP can be expelled in rare cases. Therefore, keep at a safe distance from the fusion point during the electrofusion cycle and do not connect any other electric equipment during the process.

Data obtained via barcode

nnnn	hh:mm
40.0 V 0075s 2.25Ω	
0072s	
On process	

The display will show the decreasing figures of the time until it reaches zero.

Data introduced manually

nnnn	hh:mm
40.0 V 0075s	
0075s	
On process	

Once the fusion cycle has been completed successfully, the display will show the following message:

Data obtained via barcode

nnnn	hh:mm
40.0 V 0075s 2.25Ω	
Cooling time	**20'**
Correct fusion	

The cooling time (if it is included in the bar-code) and the final message will be shown on the screen.

Data introduced manually

nnnn	hh:mm
40.0 V 0075s	
0000s	
Correct fusion	

If the fusion parameters have been introduced by means of a barcode, the cooling time established by the manufacturer of the fitting will also be shown. If the data was introduced manually, the display will show the counter to be at zero.

3.4.6 **Possible interruptions in the fusion cycle:**

The fusion process can be interrupted at any given time by pressing <STOP>. When pressed, the cycle is interrupted and the display shows the following message:

nnnn	hh:mm
40.0 V 0075s 2.25Ω	
0065s	
<STOP> pushed	

The fusion parameters obtained from the fitting's bar-code or introduced manually depending on the case are kept in the top line.
The electrofusion time counter will show the remaining time till the cycle is completed.

Press <START> to carry out another fusion. The screen will then show the **Fusion data** screen or the enabled **Traceability** options, to restart the process from the beginning.

Should other incidents appear during the fitting's electrofusion cycle, the process will be interrupted showing the corresponding message in the display, depending on the situation. For more information, refer to Chapter 4: TROUBLESHOOTING.

3.5 ACCESS TO OTHER MENUS

3.5.1 **Available options:**

You can access other menus by pressing the <START> key and then starting up the unit at the main power supply.
For models BEAT HF-MV and BEAT HF-2, there are a total of 2 menu options: INFORMATION / SETUP, whereas on model BEAT HF-Tr there are three: INFORMATION / FUSIONS / SETUP, accessed by sequentially pressing the ⬇ key.

Information	▼
Fusions (Tr only)	
Setup	▲

Use the ⬆ and ⬇ keys to move to select option and validate with <START> key.

3.5.2 **Information option:**

Validating the **Information** menu's first option:

dd/mm/yy	hh:mm
V v.vv UK	P. v.vv
S.N. xxxx/yyyy	TT°C
Lifetime	000000
0000-000-0-0-0	½

This information is shown on two screens. Press the ➡ arrow to go to screen 2/2.

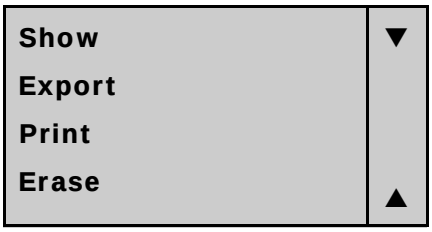
dd/mm/yy	hh:mm
Last Rev.	dd/mm/yy
Limit	dd/mm/yy
Warning	dd/mm/yy
Lock	**OFF / ON** 2/2

dd/mm/yy hh:mm : Date and time.
V v.vv UK P. v.vv : **V** software version, **UK** are the abbreviations of the set language and **P** software version of the power board.
S.N. TT°C : **S.N.** corresponds to the unit's serial number (xxxx) and the CPU's serial number (yyyy); **TT°C** corresponds to the room temperature.
Lifetime : This field indicates the time in minutes during which the unit has been fusing (real time of use).
0000-000-0-0-0 : These five fields indicate the status of the setup options in this order: Operator, Job, Additional data, Traceability and Manual electrofusion.
All zeros indicate that all options are inactive (OFF).
1248-124-1-1-1 : This setup indicates that all options have been activated (ON). The Operator and Job options can be partly activated.
Last Rev. : dd/mm/yy corresponds to the date of the last service carried out on the unit.
Limit : dd/mm/yy corresponds to the date set for the unit's next service.
Warning : dd/mm/yy corresponds to the date at which the warning message for the next service will begin to appear.
Lock : **ON** indicates that the unit will be blocked when the deadline expires; when **OFF** the unit will remain operative despite the deadline having expired.

Press either <STOP> or <START> to exit this option.

3.5.3 **Fusions option (for model BEAT HF-Tr only):**

When the cursor on **Fusions**, press the <START> key.

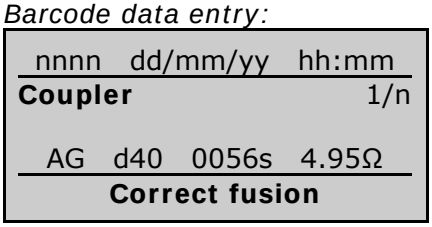


Press the ⬆ and ⬇ arrows to move to the desired option and then press <START> to validate.

• SHOW FUSIONS:

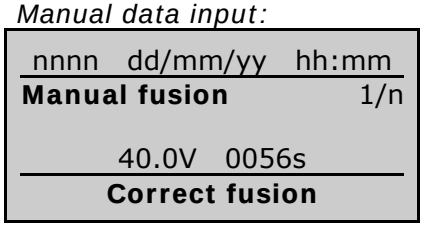
By validating the **Show** option, the last stored fusion in memory will be shown.

Barcode data entry:



The last fusion done is shown on the screen. Press the ⬇ arrow to see the previous fusion.

Manual data input:

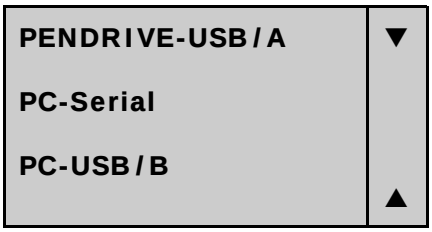


Top line	:	Fusion number; date; start time.
Coupler / Fusion data	:	Type of fitting or **Manual fusion** if the data has been introduced manually.
1/n	:	Screen number (information of the traceability). Press the ➡ to see the following screens.
Fusion data	:	Make (AG), diameter, electrofusion time and nominal resistence or voltage and initial time of electrofusion if the data has been introduced manually.
Result	:	Correct fusion, Aborted, etc., according to the situation. For the complete list of errors, refer to CHAPTER 4: TROUBLE-SHOOTING.

Press either <STOP> or <START> to exit this option.

• Export:

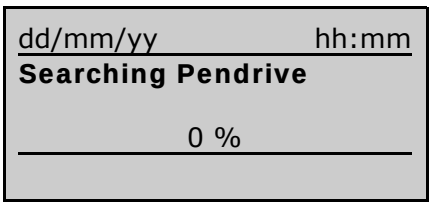
When validating the **Export** option the following options are given:



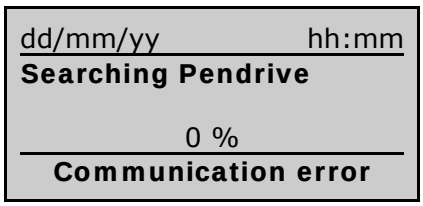
Press the ⬆ and ⬇ arrows to move to the desired option and press the <START> key to validate.

PENDRIVE-USB/A OPTION:

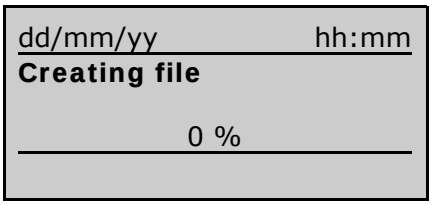
Connect a pendrive (format FAT or FAT32) to the USB/A socket (located on the middle position on the right side of the unit for model 2008, and at the front side for model 2015).
Press <START> to validate this option. The display will show the following screen:



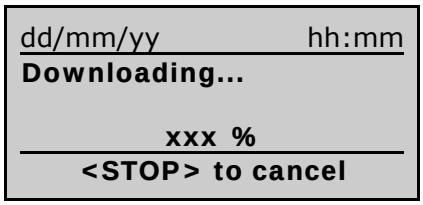
If an error should be detected (Pendrive not connected, memory full, etc.), this message will appear:



As soon as the Pendrive has been detected, the display will show the following screen:



On the right screen the download percentage **xxx** will be shown until it reaches 100%.



The download can be interrupted at any given time by pressing <STOP>: all the exported entries that have been downloaded up to that moment will be saved in the file created on the Pendrive.
The format of the exported file to the Pendrive will be xxxx_nnn.txt, in which xxxx corresponds to the unit's serial number and nnn a correlative number which is 000 initially. If the fusion data of the same unit is exported a second time, the file will be xxxx_001.txt, taken for granted that xxxx corresponds to the same unit number in both cases and that the file xxxx_000.txt can be found on the Pendrive (the different exports of a same unit are respected).

PC-SERIAL OPTION:

The unit must have been previously connected to a computer using the ODS transmission cable (for model 2008) or Null Modem cable (for model 2015), according to model. No specific PC software is required. It is done using Windows *Hyper Terminal*.

Connection configuration (for the first time):

1. Open Windows Hyper Terminal (usually in Programs / Accessories / Communications).

2. Accept any possible previous screens until you reach **Connection Description**:
   Name: e.g., BEAT-HF
   Icon: Choose one of the icons shown.
   OK

3. **Connect to** screen
   Connect using: Select COM1 or COM2 as appropriate.
   OK

4. **COM1/COM2 Properties** screen
   Port configuration:
   Bits per second: Select 19200
   Data bits: Select 8
   Parity: Select None
   Stop bits: Select 1
   Flow control: Select None
   OK

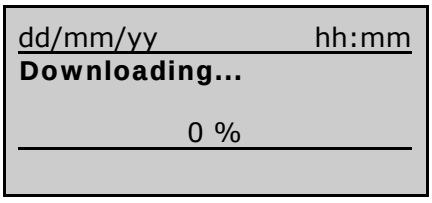
5. Connection created. When exit it is asked **Do You Wish To Save?** YES.

Exporting to a PC:

1. Run the connection created in Hyper Terminal.

2. Select **Transfer** and **Receive file...** in the Hyper Terminal menu:
   Move the received file to the following folder:
   C:\..... the one you want.
   Use reception protocol: Select Xmodem.
   Receive

3. **Name of the received file** will appear
   File name: The name you want. We recommend using *.txt or *.csv extensions.
   OK
4. With the BEAT-HF unit on the **>Export** screen, press the <START> key.



The display will show the percentage of the data exported.

5. The file will be transferred. The BEAT-HF display will show the progress %.

Press <STOP> to exit this option. Disconnect the ODS transmission cable.

PC-USB/B OPTION (for model 2008 only):

The unit must have been previously connected to a computer using an USB transmission cable. No specific PC software is required. Just the file *BEAT-HF.inf* should be available (supplied by the Grupo Acuster). It is done using Windows Hyper Terminal.

Making the first connection:

1. On the PC, have the file *BEAT-HF.inf* available (supplied by the Grupo Acuster).

2. Connect the electrofusion unit to a spare USB port on your PC (USB/B connector located on the lowest right side of the unit).

3. Switch on the **BEAT-HF** unit at the main power supply, pressing the <START> key.

4. The PC will find new hardware wizard.

   Windows XP® & Windows 2000®: Screen "Found New Hardware Wizard" (specified as Philips LPC2148VCOM).
   Can Windows connect to Windows Update to search for software ?
   Click: *No, not this time*.
   Next.

   Click: *Install from a list or specific location (Advanced)*.
   Next.

   Click: *Search fro the best driver in these locations.*
   ✓ *Include this location in the search.*
   Search where the file *BEAT-HF.inf* is located.
   Next.

   On the screen: BEAT-HF Communication Port

The software you are installing for this hardware: BEAT-HF Communication Port has not passed Windows Logo testing to verify its compatibility with Windows XP.
Continue Anyway.

   Completing the Found New Hardware Wizard.
   The wizard has finished installing the software for: BEAT-HF communication Port.
   Finish.

   Check where the port has been installed by the path:
   Control panel/System Properties/Tag "Hardware"/Select "Device Manager"
   Ports (COM & LPT): BEAT-HF Communication Port (COMX).
   Where X corresponds to the COM port where it has been installed.

5. Open Windows Hyper Terminal (on Windows WP® is usually in Programs / Accessories / Communications).

6. Accept any possible previous screens until you reach **Connection Description**:
   Name: e.g., BEAT-HF
   Icon: Choose one of the icons shown.
   OK

7. **Connect to** screen
   Connect using: Select the COM port where it has been installed (COMX).
   OK

8. **COMX Properties** screen: it is not necessary to setup the port.

9. Connection created. When exit it is asked **Do You Wish To Save?** YES.

Exporting to a PC:

1. Run the connection created in Hyper Terminal.

2. Select **Transfer** and **Receive file...** in the Hyper Terminal menu:
   Move the received file to the following folder:
   C:\..... the one you want.
   Use reception protocol: Select Xmodem.
   Receive

3. **Name of the received file** will appear
   File name: The name you want. We recommend using *.txt or *.csv extensions.
   OK

4. With the BEAT-HF unit on the **>Export** > **PC-USB/B** screen, press the <START> key. The display will show the following screen:

dd/mm/yy hh:mm
Downloading...
xxx %
<STOP> cancels

In case of a communication error is being detected, the following message will be displayed:

dd/mm/yy hh:mm
Downloading...
0 %
Communication error

5. The file will be transferred. The BEAT-HF display will show the progress %.

Press <STOP> to exit this option. Disconnect the transmission cable.

Dealing with exported fusion records:

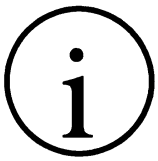
Once the fusion records have been exported, these can be consulted by the following ways:

❶ *Using the text file:*

The exported fusion records to a PC can be consulted directly in the text file created during the export process. Once the text file has been opened, the stored fusion records data will appear in a row with fields separated by a semicolon.

Fusion No.;
Unit model;
Serial number;
Unit manufacturer;
Unit last revision (service);
Type of fitting;
Fitting manufacturer;
Fitting diameter;
Fitting nominal resistance;
Fitting nominal voltage;
Nominal fusion time;
Operator No.;
Job No.;
Additional data;
Scrapped & Clean;
Clamp used;
Ambient temperature;
Date;
Start fusion time;
Real fusion time;
Fitting real resistance;
Result (text);
Result (code number);
Fitting traceability;
Traceability component 1;
Traceability component 2;
Type of fusion (electrofusion acc. to ISO 1217-4);
Software version;
Control (internal).

❷ *Using Microsoft Excel:*



NOTE !
If the entries contain data of the traceability acc. to ISO 12176-4 and these need to be decoded, go straight to clause ❸.

The exported data can easily be transferred to Microsoft Excel where they can be dealt with and organised as one wishes. To do this, follow the set of instructions below:

1. Open Microsoft Excel.

2. On the menu choose: ***File / Open***

3. In the dialogue box which appears, change the ***Files of Type:*** to:
   Text Files (*.prn; *.txt; *.csv)

4. Choose the corresponding directory and choose the exported filer from BEAT-HF.
   Click ***Open***

5. In the ***Text Import Wizard - Step 1 of 3*** which will appear, do the following:
   Field ***Delimited***: mark it
   Option ***Start import at row***: 1
   and in ***File origin***: **Windows (ANSI)**.
   Click ***Next >*** and the next step will appear.

6. In el ***Text Import Wizard - Step 2 of 3*** which will appear, do the following:
   Delimiters: mark ***Semicolon*** (the remainder of the options should be un-marked)
   Text qualifier: "
   Click ***Next >*** and the next step will appear.

7. In the ***Text Import Wizard - step 3 of 3*** which will appear, select the last column (very wide and empty) and do the following:
   In the box **Column data format**, click the option ***Do not import column (skip)***.
   Click ***Finish***.

8. The exported data will then appear on the screen in columns. The order of the columns is the same as that specified for the text file (see previous page).

9. Delete last row <END OF TRANSMISSION>.

10. Once we have the data ready in Excel, we will be able to use the following options:
    Data / Order... , ***Data / Filter / Autofilter*** or others...

❸ *Using Microsoft Access:*

If the fusion records contain traceability data of ISO 12176-4 and the respective bar codes need to be decoded, these can easily be transferred to Access (Microsoft Access 2000 or higher). To do this, follow the instructions below:

1. Open the data base file BEAT_HF.mdb *provided by the Grupo Acuster.*

2. On the menu choose the option: ***File/Get external data/Import***

3. In the dialogue box which appears, change the ***Files of Type:*** to:
   Text files (*.txt, *.csv, *.tab, *.asc)

4. Choose the corresponding directory and select the text file exported from BEAT-HF. Click ***Import***

5. In the ***Text Import Wizard*** which will appear, click ***Advanced...***
   Click ***Specs...*** and a box will open with a list with the ***beat*** specification selected.
   Click ***Open***.
   Click ***Accept*** and that window will be closed.

6. Check that the ***Delimited*** option is marked and click ***Next >***

7. In the next window, check that the delimiter is selected as ***Semicolon*** and the qualifier as **apostrophe** text. Click ***Next >***

8. In the following window, select the option ***In and existing table:*** and select the ***Electrofusion*** table. Click ***Next >***

9. On the next screen, check that the slot ***Import to table:*** indicates ***Electrofusion***. Check that the two lower options are unmarked and click ***Finish***.

10. An informative message will be open communicating that the importation is finished. Click ***Accept***.

11. To manage the data of the data file, open the ***Electrofusion*** Table in which the electrofusion data appears and whose columns are ordered in the same way as that specified for the text file (see previous page).

12. When accessing Queries we will find one created with the name **DATA with ISO12176-4**, in which the same fields are listed as in the previous Table option but in which the fields of the fitting and component's traceability (if they should exist) have been decoded with their description shown.

13. When accessing Reports, you will be able to make the reports you wish or otherwise use the provided ready made report **Report with ISO12176-4 data**.

• PRINT:

Validate the following **Print** option menu to print the fusion data to a serial printer.

Last fusion	▼
Today's fusions	
All fusions	
Date range	▲

Use the ⬆ and ⬇ keys to move to the selected option and the <START> key to validate.
Connect the unit to a serial printer using the ODS transmission cable.

Printer setup (for the first time):

Before using the serial printer on the electrofusion unit, be sure that the printer's *DIP-Switches* are correctly selected. The setup for a printer Citizen, model CT-S280, is the following:

	1	2	3	4	5	6	7	8
ON	x	x				x	x	
OFF			x	x	x			x

The generic setup for an appropriate data print-out on other printer makes and models is:

- XON/XOFF
- 8 bits
- Parity: NONE
- 19200 Bauds
- 1 Stop bit

Printing:

Validate this option to print the options: **Last Fusion / Today's fusions / All fusions / Date range**.
Use the ⬆ and ⬇ keys to move to the desired option and the <START> key to validate.
Press the <START> key to print the fusion data.

If you select the last option of **Date range**, the display will show the following screen:

Print range
DD / MM / YY
dd / mm / yy
Confirm

DD/MM/YY corresponds to the earliest fusion record (the first by default) and dd/mm/yy to the latest.

Press the ➡ and ⬅ arrows to move the cursor to a different field and the ⬆ and ⬇ arrows to modify the values.
Press the <START> key to print.

Selecting any of the four options the display will show the following message while the printing is under way.

dd/mm/yy hh:mm **Printing...** From: nnnn To : nnnn

The starting and ending fusion numbers are displayed while the printing is carried out.
When data delivery to printer has terminated, the display returns to the option selected at the start.

Press <STOP> key to exit this option.

• ERASING RECORDS:

Validate the following and last option of the **Erase** menu to delete the fusion data recorded in the unit's memory.

WARNING !
This option might have restricted access. If enabled, the following screen will appear initially:

Initial screen ❶:

dd/mm/yy hh:mm **Operator** ---------- **Read barcode**

Press either the ⬆ or ⬇ arrows once to select the **Manual edition** screen.

Next screen ❷:

dd/mm/yy hh:mm **Operator** ---------- **Manual edition**

To gain access to the **Erase** screen, the supervisor code will need to be introduced (by means of a barcode or manually, either way).
Once the supervisor code has been introduced and the <START> button pressed, the following screen will appear which is the one that is automatically shown if the restriction is not enabled:

dd/mm/yy hh:mm **Are you sure?** **Confirm**

Validate this option to request delete confirmation.

Press <STOP> key to go back to the previous screen or <START> key to continue.

3.5.4 **Setup option:**

Finally, validate the last menu option **Setup**:

Language **Date/Time** **Options (Tr only)** **Locking**	▼ ▲	Use the ⬆ and ⬇ keys to move to the desired option and validate with the <START> key.	**Date/Time** **Options (Tr only)** **Locking** **Service**	▼ ▲

This enables access to the following options: **Language / Date/Time / Options / Locking / Service**.
Use the ⬆ and ⬇ keys to move to the desired option and validate with the <START> key.
Press <STOP> key to go back to the previous screen.

• LANGUAGE:

English **Español** **Català** **Nederlands**	▼ ▲	The cursor is on the active language. Press the ⬆ and ⬇ keys to move to see the other languages loaded in the unit. If you cannot find the language you want, consult with your distributor.

Press the <START> key to accept the option. Press <STOP> key to exit this option without changing the language.

• DATE/TIME:

The following option allows you to update the date and time of the unit.

WARNING !
This option might have restricted access. If enabled, the following screen will appear initially:

Initial screen ❶:

dd/mm/yy hh:mm
Operator

Read barcode

Press either the ⬆ or ⬇ arrows once to select the **Manual edition** screen.

Next screen ❷:

dd/mm/yy hh:mm
Operator

Manual edition

To gain access to the **Date/Time** screen, the supervisor code will need to be introduced (by means of a barcode or manually, either way).
Once the supervisor code has been introduced and the <START> button pressed, the following screen will appear which is the one that is automatically shown if the restriction is not enabled:

Watch
dd / mm / yy
hh / mm / ss
Confirm

dd/mm/yy corresponds to the date and hh/mm/ss to the time.
Press the ➡ and ⬅ arrows to move the field and the ⬆ and ⬇ arrows to modify the values.

Press the <START> key to validate the updating. Press the <STOP> key to exit this option without changing the date and time.

• Options (for model Tr only):

This option allows you to modify the following options:

WARNING !
This option might have restricted access. If enabled, the following screen will appear initially:

Initial screen ❶:

dd/mm/yy hh:mm
Operator

Read barcode

Press either the ⬆ or ⬇ arrows once to select the **Manual edition** screen.

Next screen ❷:

dd/mm/yy hh:mm
Operator

Manual edition

To gain access to the **Options** screen, the supervisor code will need to be introduced (by means of a barcode or manually, either way).
Once the supervisor code has been introduced and the <START> button pressed, the following screen will appear which is the one that is automatically shown if the restriction is not enabled:

Operator	▼
Job	
Additional data	
Traceability	▲

Press the ⬆ and ⬇ arrows to move to the desired option and the <START> key to validate.

Job	▼
Additional data	
Traceability	
Electrofusion	▲

Press the <STOP> key to go back to the previous screen.

<u>Operator</u>:

Accepting this option allows us to get access to the following operator's setup options:

Show	**OFF**
Compulsory	**OFF**
ISO 12176-3	**OFF**
Reset	**OFF**

Use the ➡ or ⬅ keys to shift from **OFF** to **ON** or vice versa. Press the ⬆ and ⬇ keys to move to the desired option.
Press <START> key to validate the changes.
Press <STOP> key to exit this option without making any changes.

Selecting **ON** in **Show**, the operator identification screen is enabled when the unit is turned on. At this stage, this identification can be carried out or not, optionally, and what is more, it allows the input of any alpha-numerical ID up to 16 characters.

The next option allows you to establish the obligation or not of carrying out the identification:

Show	**ON**
Compulsory	**ON**
ISO 12176-3	**OFF**
Reset	**OFF**

Press the ⬆ and ⬇ keys to move to the desired option. Use the ➡ or ⬅ keys to shift from **OFF** to **ON** or vice versa. **ON** enables the obligation and in turn makes the operator's identification in **Show** option shifts to **ON** if it still happened to be **OFF**.

The identification is now obligatory but still allows the entry of any alpha-numerical ID up to 16 characters.

The next option allows the operator's ID to be established according to the **ISO 12176-3** criteria in the fields of expiry date and skills (which allows for electrofusion processes), language, etc.

Show	**ON**
Compulsory	**ON**
ISO 12176-3	**ON**
Reset	**OFF**

Press the ⬆ and ⬇ keys to move to the desired option. Use the ➡ or ⬅ keys to shift from **OFF** to **ON** or vice versa. **ON** enables the application of criteria set in ISO 12176-3 and in turn makes the **Show** and/or **Compulsory** options shift to **ON** if it still happened to be **OFF**.

Apart from being obligatory, the identification must be carried out following the criteria set out in the ISO 12176-3. Nevertheless, it does allow being introduced by means of a barcode or manually using the keyboard.

Finally, the latest option **Reset** allows to establish the way to delete the operator's identification entered.

Show	**ON**
Compulsory	**ON**
ISO 12176-3	**ON**
Reset	**ON**

Press the ⬆ and ⬇ keys to move to the desired option. Use the ➡ or ⬅ keys to shift from **OFF** to **ON** or vice versa.
Pressing **ON** deletes the operator's ID every time the unit is stopped whereas **OFF** only when a change of date.

Press the <START> key to accept the selection made. Press the <STOP> key to exit the option without making a modification.

Job:

Accepting this option allows you to gain access to the following setup options of a job:

Show	**OFF**
Compulsory	**OFF**
Reset	**OFF**

Use the ➡ or ⬅ keys to shift from **OFF** to **ON** or vice versa. Press the ⬆ and ⬇ keys to move to the desired option.
Press the <START> key to validate the changes made.
Press the <STOP> key to exit this option without making any changes.

When selecting **ON** in **Show**, the job identification screen is enabled when the unit is turned on (sequentially after the identification of the operator, if it is enabled). At this stage, this identification can be done or not, optionally, and allows the entry of any alpha-numerical identification up to 16 characters.
The following option allows you to establish the obligation or not of identification:

Show	**ON**
Compulsory	**ON**
Reset	**OFF**

Press the ⬆ and ⬇ keys to move to the desired option.
Use the ➡ or ⬅ keys to shift from **OFF** to **ON** or vice versa.
ON enables the obligation and in turn automatically makes the job ID in the **Show** option shifts to **ON** it still happened to be **OFF**.

Identification is now obligatory, allowing any alpha-numerical ID up to 16 characters to be introduced, by means of a barcode or manually, either way.
Finally, the latest option **Reset** allows to establish the way to delete the job's identification entered.

Show	**ON**
Compulsory	**ON**
Reset	**ON**

Press the ⬆ and ⬇ keys to move to the desired option.
Use the ➡ or ⬅ keys to shift from **OFF** to **ON** or vice versa.
ON is used to delete the job's ID every time the unit is stopped whereas **OFF** is used only with the change of date.

Press the <START> key to accept the selection made. Press the <STOP> key to exit the option without making any changes.

Additional data:

Accepting this option allows you to gain access to the following Additional data setup option:

Show	**OFF**

Use the ➡ or ⬅ keys to shift from **OFF** to **ON** or vice versa.
Press the <START> key to validate the changes.
Press the <STOP> key to exit this option without making any changes.

When selecting **ON** in **Show**, the additional data screen is enabled when the unit is turned on (sequentially after the identification of the operator and job, if it is enabled). It allows any alpha-numerical ID up to 16 characters to be entered.

Traceability:

Accepting this option allows you to gain access to the following traceability setup option:

Show **OFF**	Use the ➡ or ⬅ keys to shift from **OFF** to **ON** or vice versa. Press the <START> key to validate the changes. Press the <STOP> key to exit this option without making any changes.

When selecting **ON** in **Show**, the traceability screen is enabled when the unit is turned on (sequentially after the identification of the operator, job and additional data, if it is enabled). It allows the entry of the fitting's traceability ID by means of a barcode or manually following the ISO 12176-4.

Electrofusion:

Accepting this last option allows us to gain access to the electrofusion setup option:

Manual fusion **ON**	Use the ➡ or ⬅ keys to shift from **ON** to **OFF** or vice versa. Press the <START> key to validate the changes. Press the <STOP> key to exit this option without making any changes.

With the **Manual fusion** on **ON**, the unit allows electrofusions with manually entered data. When selecting **OFF** the unit will only accept the entry of data by means of a bar code (**Read barcode**) or by introducing the fitting's 24 alpha-numerical characters of its corresponding barcode (**Edit barcode**).

• LOCKING:

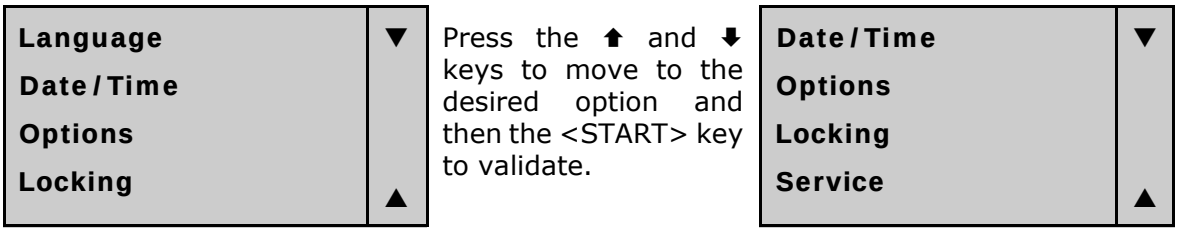
When validating the **Locking** option the following options are given:

By date **By fusions** **Others**	▼ ▲

This option is an internal option and requires an access password to enable the locks. Consult your distributor.

• **Service:**

Finally, validating the last option of the menu **Setup**:



The last of the options of the **Setup** menu is exclusively for use by the Grupo Acuster after-sales service, and requires an access password to enter.
Press <STOP> to go to the previous screen.

To exit this access to other menus permanently, stop the unit by means of the general switch.

CHAPTER 4: TROUBLESHOOTING

4.1 GENERAL

All maintenance and repair work of the **BEAT HF** electrofusion units is to be carried out by qualified personnel. Full guarantees are obtained by shipping the unit to the Grupo Acuster After-Sales Service, both for the yearly revision and for repairing any fault that may have occurred in the unit.

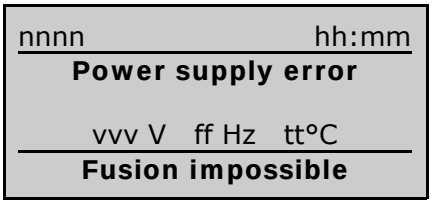
4.2 DISPLAY ERROR MESSAGES

4.2.1 **Input voltage / frequency:**

The input voltage/frequency is valued differently according to the process being done at the time.

1. *Verification before fusion process:*

With the unit in the initial screen the input voltage is checked. If the input voltage/frequency is outside the established tolerances (min. 180Vac / max. 270Vac and min. 40Hz / max. 70Hz, respectively), the screen will show:

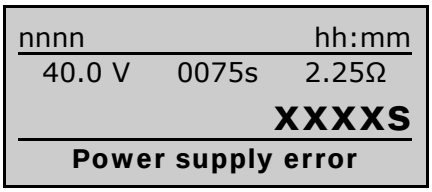


This message is displayed when the input voltage or frequency are outside tolerance:
Upper limit: 270 Vac / 70 Hz
Lower limit: 180 Vac / 40 Hz

Check the power source and correct the defect. It is not necessary to switch the unit off and switch it on again to refresh the input voltage. Once the lower limit is overpassed the unit is reenabled at 200 Vac and 45 Hz (depending of which is the cause) and decreased the upper limit, the unit is reenables at 250 Vac and 65 Hz (depending of which is the cause).

2. *Verification during the electrofusion cycle:*

Once the electrofusion cycle has started, the unit is continually checking the input voltage until the cycle end. During the electrofusion cycle, the lower limit goes down to 140 V whereas the upper limit is increased up to 280 V. If an input voltage below the 140 V is detected by the unit, the display will show the following message:

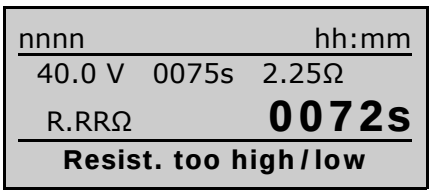


Where xxxxs corresponds to the remaining cycle time at the moment of stopping.
The power supply error is displayed to an input voltage of ≤ 140 V and ≥ 280 V detected by the unit.

Check the power source (generator), connections, state of fitting, etc. and correct the defect. It is not necessary to switch the unit off and switch it on again to refresh the input voltage.

4.2.2 Fitting resistance outside margins (not for model MV):

Once the electrofusion process has begun and where data is entered exclusively by barcode, the unit verify if the fitting resistance matches the one of the connected fitting and it is within the tolerances established by the fitting's manufacturer.
In case of the resistance is found incorrect, the display will show the following messages:

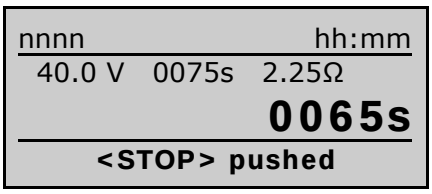


A blinking cursor with the resistance value read by the unit is displayed along the **Resist. too high** or **Resist. too low**, as the case may be.

Press <START> to continue. Check the fitting, the connections, etc., and restart the cycle. If this message persists, send the unit to the After-Sales Service to check the calibration of the resistance measure.

4.2.3 Interruption by operator:

If the operator presses the <STOP> key once the electrofusion process has begun, the display will show the following message:

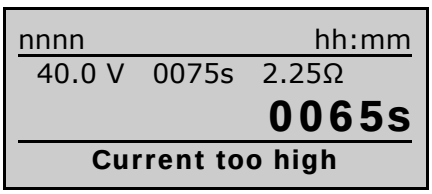


The fitting barcode parameters entered are still on the upper line.
The time counter will display the remaining cycle time at the moment of stopping.

Press <START> to continue. The next screen will show **Fusion data** to restart the electrofusion process from the very beginning.

4.2.4 Output current:

If the electrofusion current is excessive, the display will show:

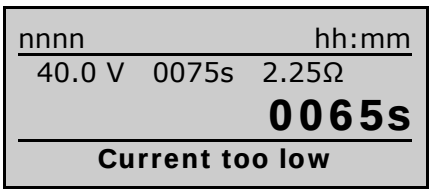


The fitting barcode parameters entered are still on the upper line.
The time counter will display the remaining cycle time at the moment of stopping.

Press <START> to continue. The next screen will show the **Fusion data** to restart the electrofusion process from the very beginning.
This message appears in the following cases:

1. When the connected fitting has a very low resistance, outside the margins.
2. Crossed fitting resistence.

If the electrofusion current is too low, the display will show:



The fitting barcode parameters entered are still on the upper line.
The time counter will display the remaining cycle time at the moment of stopping.

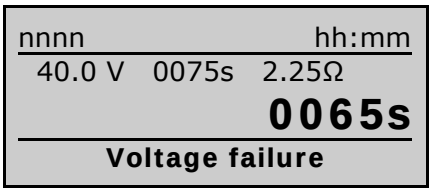
Press <START> to continue. The next screen will show **Fusion data** to restart the electrofusion process from the very beginning.

This message appears in the following cases:

1. Fitting not connected.
2. Disconnection of the electrofusion terminals.
3. Cut in the filament of the fitting resistance.
4. If the electrofusion current is lower than 2 A.

4.2.5 **Elecrofusion output voltage:**

If there is a deviation higher than ± 0,5 V in the output voltage during the electrofusion of the fitting, the cycle will stop and the display will show:

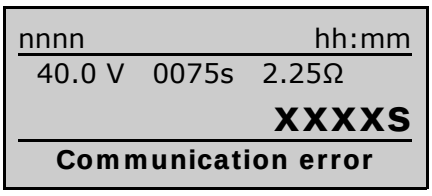


The fitting barcode parameters entered are still on the upper line.
The time counter will display the remaining cycle time at the moment of stopping.

Press <START> to continue. The next screen will show **Fusion data** to restart the electrofusion process from the very beginning.
This message may also appear due to incorrect fitting application (fitting voltage outside range).

4.2.6 **Communication error:**

In case of an internal communication error between the power board and the CPU board is detected, when the electrofusion cycle is started the following message will appear:



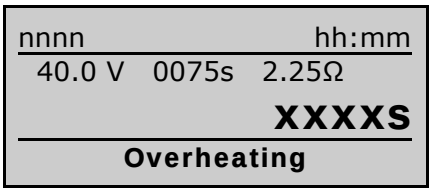
The fitting barcode parameters entered are still on the upper line.
Where **xxxx**s corresponds to the remaining cycle time at the moment of stopping.

It is advised to send the unit to the After-Sales Service for its check and repair.

4.2.7 **Protection against internal temperature:**

The **BEAT HF** is an electrofusion unit of high performance which allows the jointing of large size fittings in a continuous way without cooling interruptions. However, if the operational conditions were so severe that would make the unit internal temperature may exceed the maximum allowed, the following procedure is established:

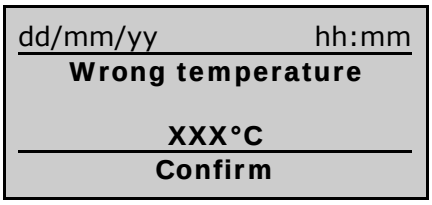
If during an electrofusion cycle the unit becomes overheated, the cycle will stop and the unit will remain blocked until the temperature falls down to the acceptable limits. The display will show the following message:



The fitting barcode parameters entered are still on the upper line.
Where **xxxx**s corresponds to the remaining cycle time at the moment of stopping.

4.2.8 **Ambient temperature outside margin:**

When detected a room temperature outside the established limits (on the standard setup the limits are -15°C and +50°C) or, on the other hand, the RT sensor is faulty, once turned on the unit the following message will be displayed:

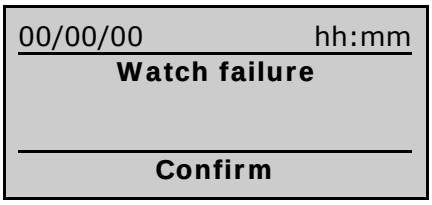


When turning on, the unit will emit two acoustic signals and a **Wrong temperature** message will appear on the screen. **xxx** corresponds to the room temperature read by the RT sensor. If 255 is displayed means faulty or disconnected sensor.

In the case or faulty or disconnected sensor, it is advised to send the unit to the After-Sales Service for its check and repair.

4.2.9 **Detection of date/time error:**

If the internal battery voltage is low or has suffered a disconnection for bad contact, etc., when turning on the unit the following message will be displayed:



When turning on, the unit will emit two acoustic signals and a **Watch failure** message will appear on the screen. The date will be 00/00/00. Press <START> to go to the **Date/Time** to set the correct time.

If this message is displayed again, it is advised to send the unit to the After-Sales Service for its check and repair.

CHAPTER 5: MAINTENANCE

5.1 GENERAL

5.1.1 Introduction:

The electrofusion units **BEAT HF** have been designed and manufactured for a long life service without the need for costly repairs and adjustments. All that is required is careful handling when loading/unloading and during transportation, and in general to keep the unit clean by following the recommended preventive maintenance. The costs are very low and are soon written off given that the unit will be fully functional at all times.
This section includes a list of general upkeep and maintenance routine operations. Should any problem arise please refer to CHAPTER 4: TROUBLESHOOTING point in this *User Manual*. However, no action should be taken by unqualified personnel beyond these troubleshooting measures in order not to run the risk of seriously damaging the unit.

5.1.2 Storage:

If the unit is not to be used for a long period of time, keep it in its original packing and protected from dust, moisture, extremes of temperatures, direct sunlight, and so on. The electrofusion control box could be stored either on the warehouse floor or in pallet racks.

5.1.3 Cleaning:

Clean the electrofusion control box regularly using only a damp cloth.

NOTICE !
Do not clean the electrofusion control box with water under pressure, by immersion in water o with compressed air.

Should the unit be very dirty, clean it with a bit of alcohol (do not use solvents or cleaning products containing trichloroethylene).

5.1.4 Services:

We recommend shipping the electrofusion control unit to the Grupo Acuster authorized distributor, for a minimum yearly service.

5.2 MAINTENANCE OF THE FUSION CONTROL BOX

5.2.1 **Fusion control box:**

Besides the exterior cleaning of the casing, there is no specific maintenance for the electronic control unit. Tune-ups and adjustments should be performed by qualified personnel, or by an Grupo Acuster authorized distributor.

5.2.2 **Replacement of electric cables:**

The electrofusion unit **BEAT-HF** has been designed in a way that small maintenance jobs such as the replacement of electric cables due to daily use (generally bad use) can be carried out by the unit's owner or the company's maintenance department.

CAUTION !
Perform this operation with the unit disconnected. There is a potential danger of electrical shock.

Mains cable (model 2008 only):

The power cable is connected in the unit through a circular multi-contact connector. In the event of failure or damage, it can easily be replaced by a new one supplied by an Grupo Acuster authorized distributor.

Figure 11a: Mains cable (plugged)

Figure 11b: Mains cable (unplugged)

Electrofusion cables:

The unit's electrofusion cables are connected to their respective internal cables by means of an external connection which allows the cables to be replaced without opening the rear cover. In the event of failure of damage, they can easily be replaced by new ones supplied by an Grupo Acuster authorized distributor.

For the electrofusion cable replacement, proceed with the following steps:

1. Using a 24mm open-end spanner, hold the gray reducer (*Figure 12a*).

2. Using a second 24mm open-end spanner, unscrew the cable gland (*Figure 12b*).

Figure 12a *Figure 12b:* *Figure 12c* *Figure 12d*

3. With the cable gland totally unscrewed, pull the cable out to get access to the connecting point (*Figure 12c*).

4. Unfasten the connection between the internal cable and the electrofusion cable holding the nut with an 8mm open-end spanner and loosen the screw with a 3mm Allen key (*Figure 12d*). *Attention, do not lose the safety washer !*.

5. Replace the electrofusion cable and assemble on the opposite sequence.

5.2.3 Assembly of the fan kit (if it is not already installed):

Even though the **BEAT-HF** electrofusion unit is of high-perfor mance, for models on it is not already installed a cooler fan kit can be mounted externally without the need of opening the unit, this to increase its performance even more.
The unit comes provided with a pre-installed feed connection for the cooler fan kit.
To assemble it, connect the fan to the pre-installed electric terminal in the unit and slide the four nuts screwed to the cooler fan bracket bolts through the lateral heat sink mounting rails. Once in position, tighten the four nuts.

Figure 13

5.2.4 Updating the Programme's version:

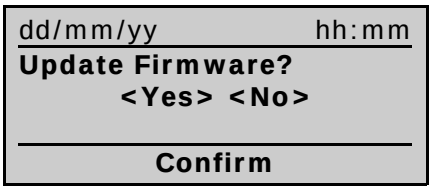
The updating of the programme version of the **BEAT HF** units is done in principle by the Technical Support Services of Grupo Acuster. Nevertheless, the client may update the software version by means of the following options:

PEN DRIVE USB/A (for model Tr only):

Connect the memory stick in the USB/A socket (located on the middle position on the right side of the unit for model 2008, and at the front side for model 2015). The Pendrive:

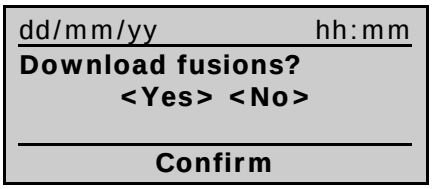
- It must contain the *beat-hf.bin* file corresponding to the version that is to be loaded, which has to be in its root directory.
- It must be format FAT or FAT32 and of one partition only.

Turn the unit on by means of the master switch, keeping the ⬆ key pressed. The following screen will appear:



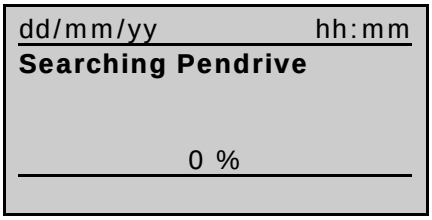
Confirmation of the update of the software version is requested. The cursor remains situated on the <Yes> position by default. To exit, press the ➡ arrow to move it to <No> and press <START>. The unit will then show the first job screen.

With the cursor on <Yes> and pressing <START> the display will show the following screen:

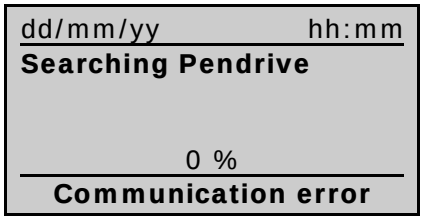


Before updating the software version, confirmation to save the fusion data is requested. The cursor remains situated on <Yes> by default. If you do not want to save the fusions, press the ➡ arrow to move it to <No> and press <START>. The screen will automatically go to **Updating Firmware**.

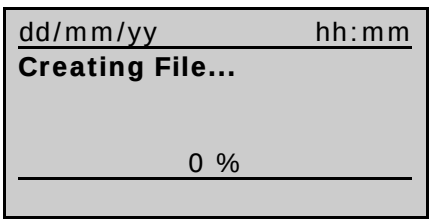
With the cursor on <Yes> and pressing <START> the display will show the following screen:



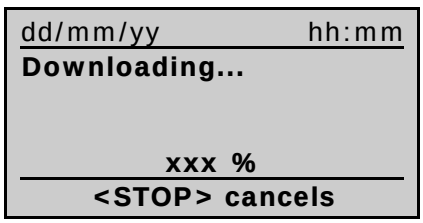
If an error is detected (memory stick not connected, memory full, etc.), the following message will appear:



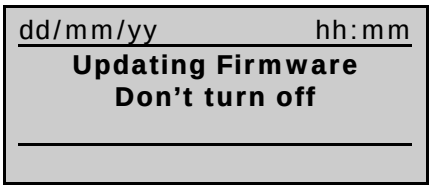
Immediately after having detected the Pendrive, the display will show the following screen:



On the right screen the download percentage **xxx** will be shown until it reaches 100%.



The download can be stopped at any given time by pressing <STOP>: the entries that have been downloaded up to that stage will have been exported to the file created on the Pendrive.
Once the data has been exported (for further details related to the exportation, refer to OPTION **PENDRIVE-USB/A** in section 3.5.3 of this *Manual*), the software version update is begun automatically.



The backlight of the screen goes off. The update process lasts about a minute.

Once the download is complete, the unit will start up automatically (when the software is updated with a new version the default language -English- is restored and existing fusion records, fusion counter, operator and job data are erased).

WITH A COMPUTER VIA THE SERIAL PORT (not for model MV):

To carry out a download via the serial port of a computer, it must have the necessary software installed. If it is the first time, install the **Beat-HF Firmware Updater** software on the PC (only available in English).

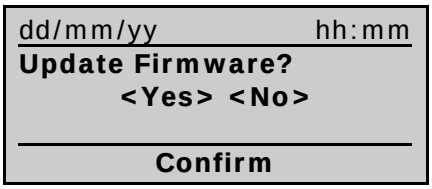
Software downloading procedure:

1. Connect the ODS transmission cable (model 2008) or Null Modem cable (model 2015) between the unit and the PC serial port.

2. Execute the software on the PC. If it is the first time, choose the correct COM port where the connection is made.

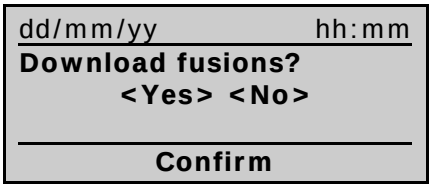
3. Open the tab *file* (the file of the new *beat-hf.bin* software version to be download should be copied), find and click the file to be loaded.

4. Plug in the unit to mains and turn the master switch on while the ⬆ key is kept pressed. The following message is displayed:



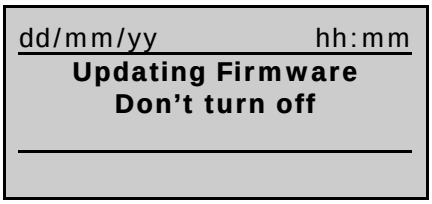
Confirmation that the software version has been updated is requested. The cursor remains situated on <Yes> by default. To exit, press the ➡ arrow to move it to <No> and press <START>. The unit will show the first job screen.

With the cursor on <Yes> and pressing <START> the display will show the following screen:



To update the software version via the serial port, press the ➡ arrow to move it to <No> and press <START>. The screen will switch to **Update Firmware** directly.

With the cursor on <No> and pressing <START> the display will show the following screen:



The backlight of the screen will go off. The update process lasts about a minute.

5. When the led of the <START> push-button flashes on and off slowly, click "Start Process" in the software of the PC.

6. Once the download is complete, the unit will start up automatically (when the software is updated with a new version the default language -English- is restored and the existing fusion records, fusion counter, operator and job data are erased).

7. Switch off the unit, unplug the transmission cable and verify unit operation.

CHAPTER 6: TECHNICAL CHARACTERISTICS

6.1 ELECTROFUSION CONTROL UNIT

6.1.1 General specifications:

Model	BEAT HF-MV	BEAT HF-2	BEAT HF-Tr
Classification acc. to ISO 12176-2			
Setup: Language	Multilingual (ask for available languages)		
Setup: Date/Time	Manual input		Lockable
Setup: Operator ID			ON/OFF acc. to ISO12176-3
Setup: Job order			ON/OFF acc. to ISO12176-4
Setup: Additional data			ON/OFF 16 max characters
Setup: Traceability			ON/OFF acc. to ISO12176-4
Setup: Manual			ON/OFF
Input voltage	180 Vac to 270 Vac. Nominal voltage: 230 Vac		
Input frequency	40 Hz to 70 Hz. Nominal frequency: 50 Hz		
Electrofusion voltage	8 to 48 V galvanically separated		
Output power	Nominal: 3,500 W (max 4,500 W)		
Generator output performance	5.5 kVA unipolar operation; electronic regulation		
Degree of protection (CEI 60529) Mechanical strength (CEI 62262)	IP54, Class I IK10 (20 Joules)		
Duty factor	100% with electronic temperature monitoring of the unit		
Working temperature	Informative, with established limits (recommended acc. to ISO 12176-2 from -10 to 40°C)		
Display	LCD graphic, Unicode (64x128 pixels)		
Acoustic warning	Piezoelectric buzzer		
Enter fusion data: Manual	Voltage: Multi voltage from 0.5 to 0.5 V Time: Up to 5,940 seconds (99 minutes)		
Automatic		Bar-code acc. to ISO/TR 13950	
Internal memory capacity			~ 900 fusion records
Other features	Soft start and display messages in case of initial voltage failure		
Power cable	3x2.5 mm^2 for 230 Vac (Schuko + French type plug) 4 m long		
Electrofusion cables	1x16 mm^2, 3 m long (female terminals of diameter 4 mm)		
Scanner		Model 2008 with Amphenol plug (rounded) Model 2015 with D-sub 9 pins plug	
Connection of scanner, PC serial printer (Tr only)		Model 2008: serial connector & USB/B Model 2015: D-sub 9 pins plug	
Connection to Memory stick			USB/A
Included accessories	Side bag Scanner (not for MV) Set of 4 and 4.7 mm electrofusion adapters Transport case Kit of rear fan (acc. to model)		
Optional accessories (acc. to model)	Serial printer Pen Drive USB/B cable (model 2008) ODS transmission cable (model 2008) Null Modem cable (model 2015) SD card Modem GPRS Kit of rear fan (if it is not already installed)		
Weight and dimensions (mm)	Model 2008: Height: 410; Width: 410; Length: 280; Net weight: 17 kg Model 2015: Height: 385; Width: 300; Length: 250; Net weight: 16 kg		

6.1.2 **Generator specifications:**

Frequency	:	50/60 Hz
Output power	:	5.5 kVA (minimum)
Voltage	:	230 Vac
Intensity	:	20 A (min) for 230 Vac
Voltage control	:	Preferably electronic

6.2 SIZE AND WEIGHT

6.2.1 **Weights and dimensions**:

Net weight (including cables and accessories)	:	17 Kg (model 2008) / 16 kg (model 2015)
Package exterior dimensions	:	470 x 330 x 470 mm (model 2008) 380 x 310 x 230 mm (model 2015)
Gross approximate weight	:	24 Kg (model 2008) / 22 kg (model 2015)

6.2.2 **Accessories:**

List of accessories included in the unit:

QTY	DESCRIPTION
1	Side bag
1	Quick User Guide
1	Laser scanner (not for MV)
2	φ 4 mm terminal adapter
2	φ 4.7 mm terminal adapter
1	Kit of rear fan (acc. to model)

List of optional items not included in the standard unit (according to model):

QTY	DESCRIPTION
1	ODS transmission cable (model 2008)
1	DB9 F/F Null Modem Cable (model 2015)
1	High speed thermal serial printer
1	USB/B cable (model 2008)
1	Pen Drive
1	SD card
1	Modem GPRS
1	Kit of rear fan (if not fitted)

RESERVED FOR NOTES